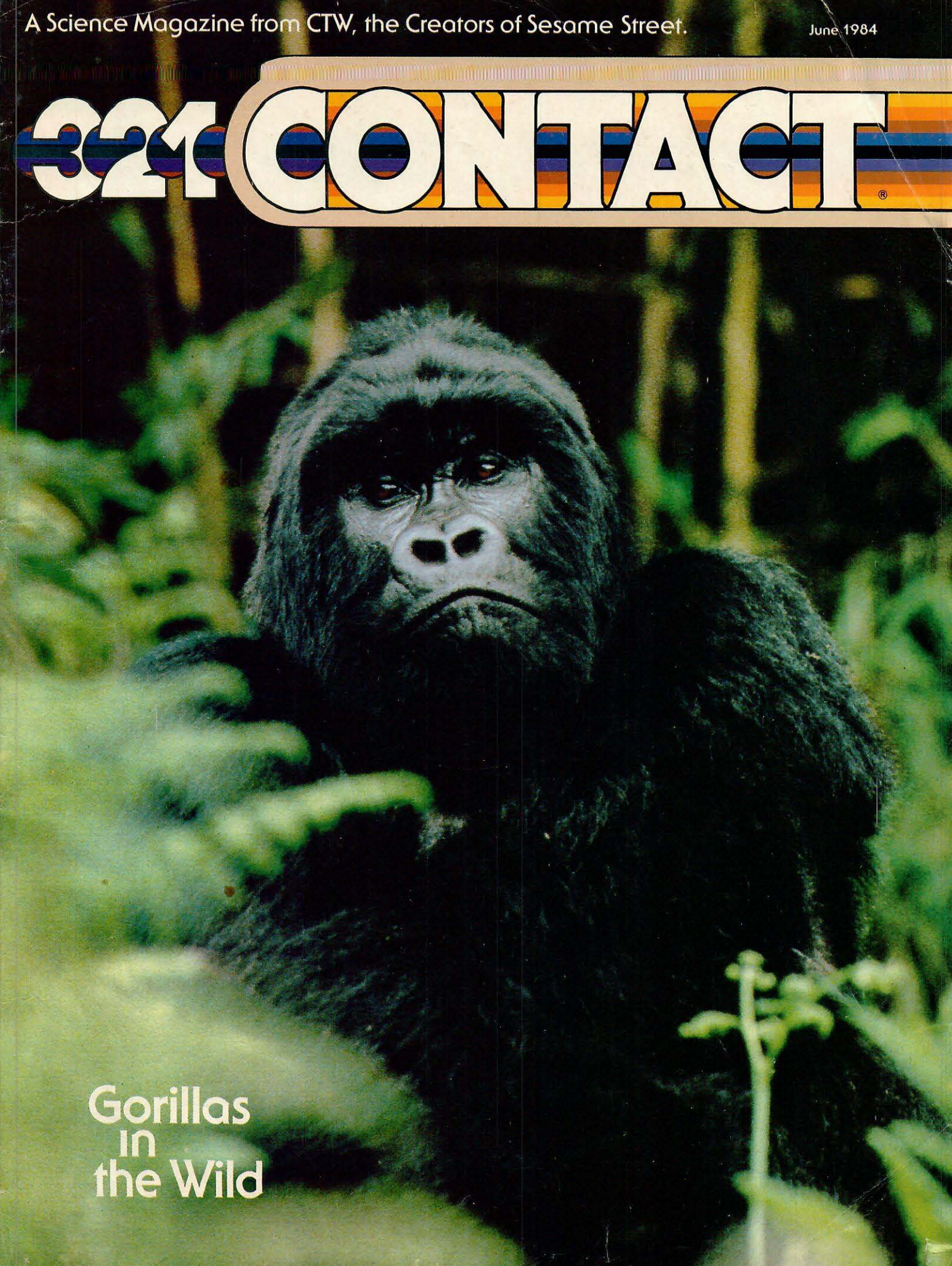
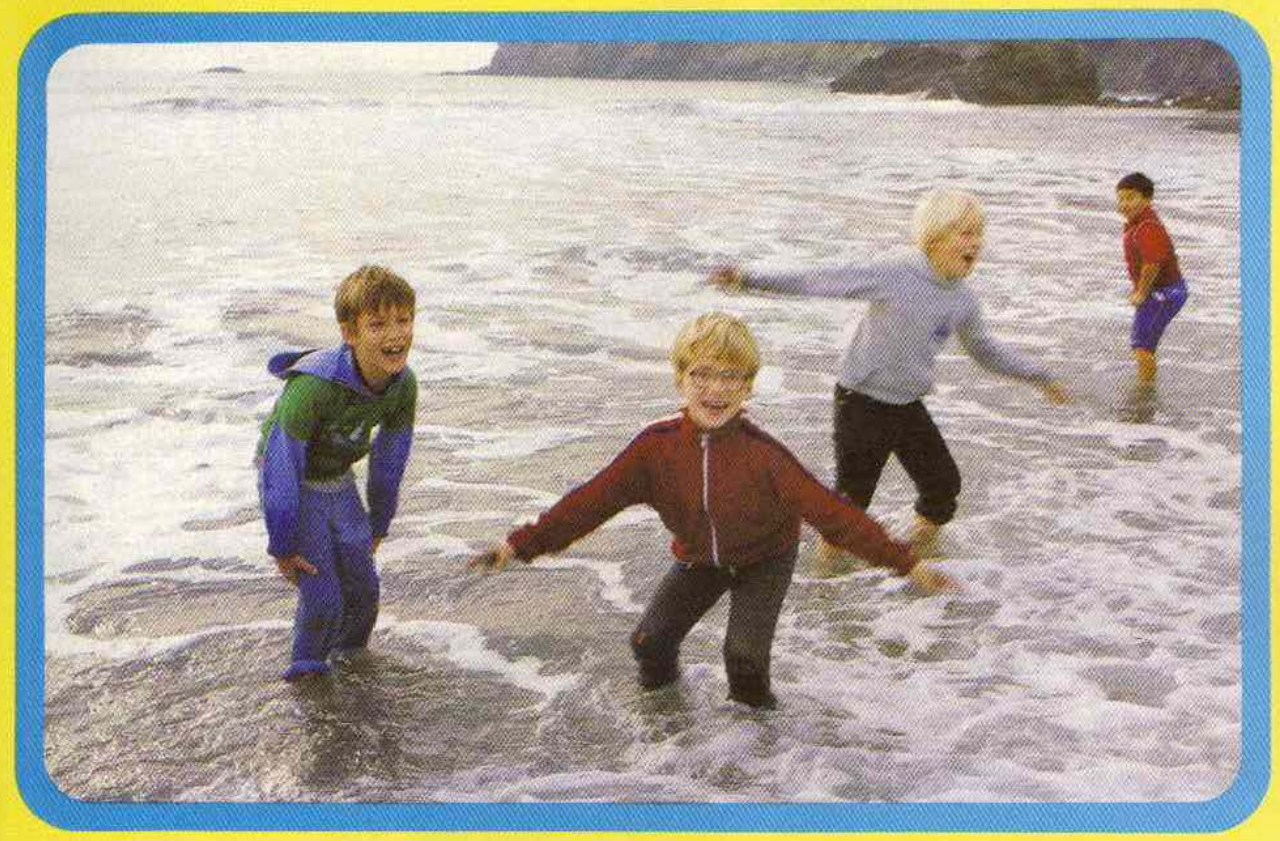
A Science Magazine from CTW, the Creators of Sesame Street.

June 1984

3-2-1 CONTACT®



Gorillas in the Wild



Beach Party

Braving the waves is more than just fun for these California kids. At the same time, they're finding out about currents, tides, and the force of water.

The children are taking part in a special program where kids become detectives to unlock the mysteries of the beach. What mysteries have the super-sleuths solved so far? How about this one: What sea plant found on the beach is used to make ice cream?

For the answer to that riddle, and other beach mysteries, check out page 14.

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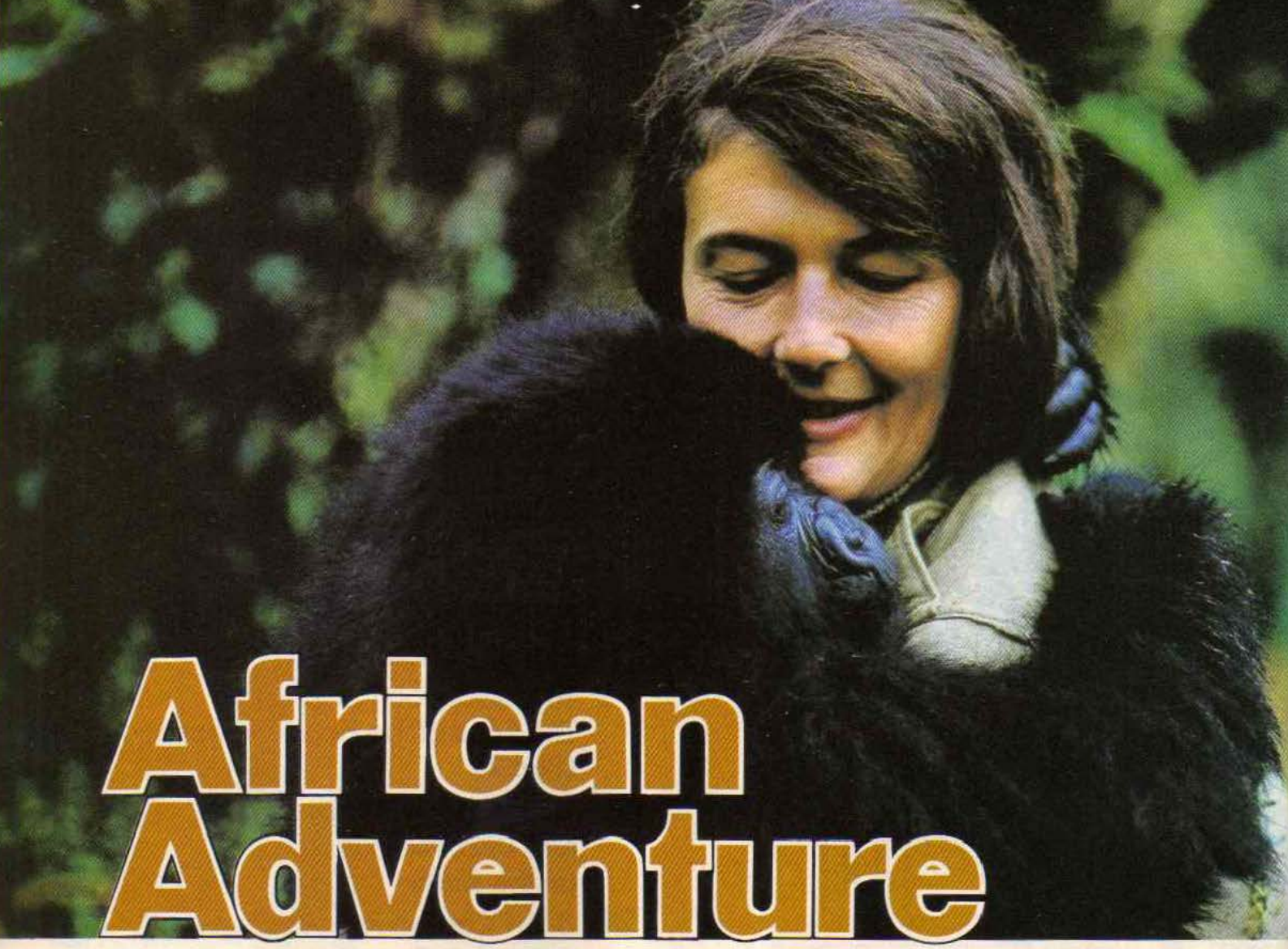
Featuring This Month

Plus Our Regular Departments



African Adventure

A WOMAN MAKES FRIENDS WITH GORILLAS

by Jonathan Rosenbloom

When you think of gorillas, what comes to mind? The movie monster King Kong atop a skyscraper swatting airplanes as if they were flies? A giant, hairy ape beating its chest and chasing after innocent people?

If so, you're not alone. Over the years, moviemakers and writers have often pictured the largest members of the ape family as ferocious, evil creatures of the jungle. This idea has stuck in the minds of many people.

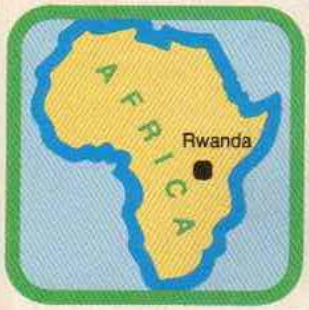
That makes Dian Fossey very angry. "It's not fair, and it isn't true. Gorillas are shy, gentle creatures. They would like nothing better than to stay away from humans," she told CONTACT.

Dr. Fossey should know. She is the world's leading expert on the mountain gorilla–an endangered species of the ape family. Dr. Fossey has spent more than 13 years living among these gentle apes in the mountains and rain forests of Rwanda, a nation in central Africa.

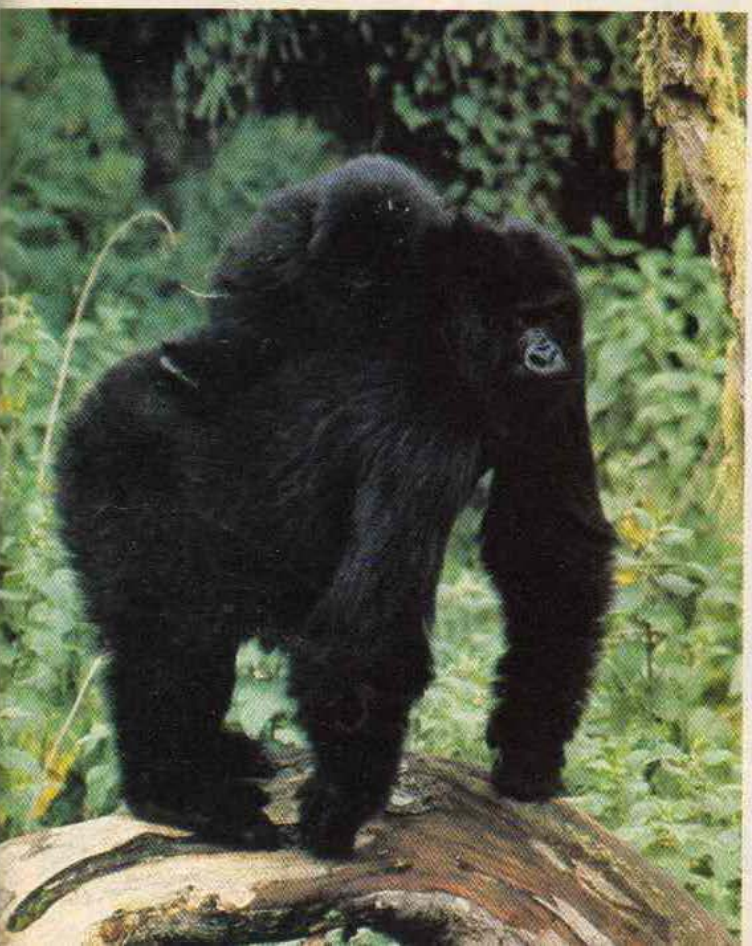
There, Dian Fossey has witnessed gorilla births and deaths. She has seen baby gorillas killed by *poachers* (illegal hunters). And she has risked her life to save young gorillas from being carried off to faraway zoos. But most important, Dian Fossey is probably the only human who has been accepted by the wild mountain gorilla as a friend.

"The years I spent in Rwanda were the most rewarding years of my life," Dr. Fossey said. "It was an incredible adventure to live in the jungle wilderness. Where else can you wake up each morning to find gorillas, leopards, elephants, and buffalo? I was never lonely there."

For Dr. Fossey, getting used to the wilderness



Above: Dr. Fossey studies these young gorillas up close. **Below:** Two-year-old Tiger is carried by his mother. Infants travel on their mother's back until they are two and one half.



was not difficult. Getting close to the gorillas proved to be more of a challenge. "It didn't happen overnight. It took two years," she recalls. "An animal can sense whether a human respects it. If an animal senses your trust, you can slowly win its trust in return."

Getting to Know You

First, Dr. Fossey had to let the gorillas know she meant them no harm. So she pretended she was one of them. When she approached, she didn't walk upright. She crawled. This way, the gorillas wouldn't think Dr. Fossey was dangerous. Dr. Fossey also pretended to munch on leaves and vines–the diet of the gorilla.

"For a number of months, I imitated the gorillas' chestbeats by slapping my hands against my thighs. I thought I was very clever," Dian Fossey laughs. "But then I discovered I was giving out the wrong signal. The chestbeating, which looks so scary in the movies, is really the gorillas' sign for alarm. It means they are frightened. And I thought I was just being friendly!"

After Dr. Fossey's two years of aping the apes, the gorillas accepted her. Now the scientist could get to work and study her subjects up close.

Each day Dr. Fossey would observe and ➤➤

record the actions and habits of the mountain gorilla. She took notes and photos. Dr. Fossey made tape recordings of the gorillas' sounds for fright, contentment, and anger. She also studied what they ate, and how they cared for their young. If a gorilla died, Dr. Fossey would examine it, trying to determine the cause of death.

Dr. Fossey told us that gorillas travel in groups called bands. This is their family unit. A band is made up of as many as 20 members. The family leader is a large male, called the silverback, because his back hair becomes white as he ages.

The gorillas spend about half their day resting. In nice weather they sunbathe, and seem to enjoy the warmth of the sun. As they rest, they make a noise which sounds like a cross between a cat's purr and a stomach growl. "That means they are happy and content," notes Dr. Fossey.

The mountain gorilla spends much of its day lazily munching on ferns, leaves, plant shoots, stems, and fruit. It never eats other animals. Sometimes mountain gorillas eat on the run, as they head for a place to build their nests for the night. Their nests are made from grasses, bark, and leaves.

As Dr. Fossey got to know the mountain gorillas, she named each one. And each was special to her. Coco cried tears when she was upset. Beethoven, a 350-pound silverback, watched out for his group. He defended them in time of danger. But he was also very gentle.

Gorilla Antics

Beethoven spent hours playing with the young members of his family. He would sit with a young gorilla on his lap, cleaning its fur or tickling it. Occasionally, a female member of the family would come over and gently nuzzle Beethoven.

And then there was Digit, the mischief maker. Whenever he saw Dr. Fossey, he would flop over on his back and wave his stumpy legs in the air. Then he'd look at her as if to say, "How can you resist me?"

"It was hard to!" laughs Dr. Fossey.

Digit spent much of his time checking out thermos bottles, notebooks, gloves, and cameras. One of his favorite activities was looking at his

reflection in Dr. Fossey's mirror. Then he'd reach behind to see if anyone was there.

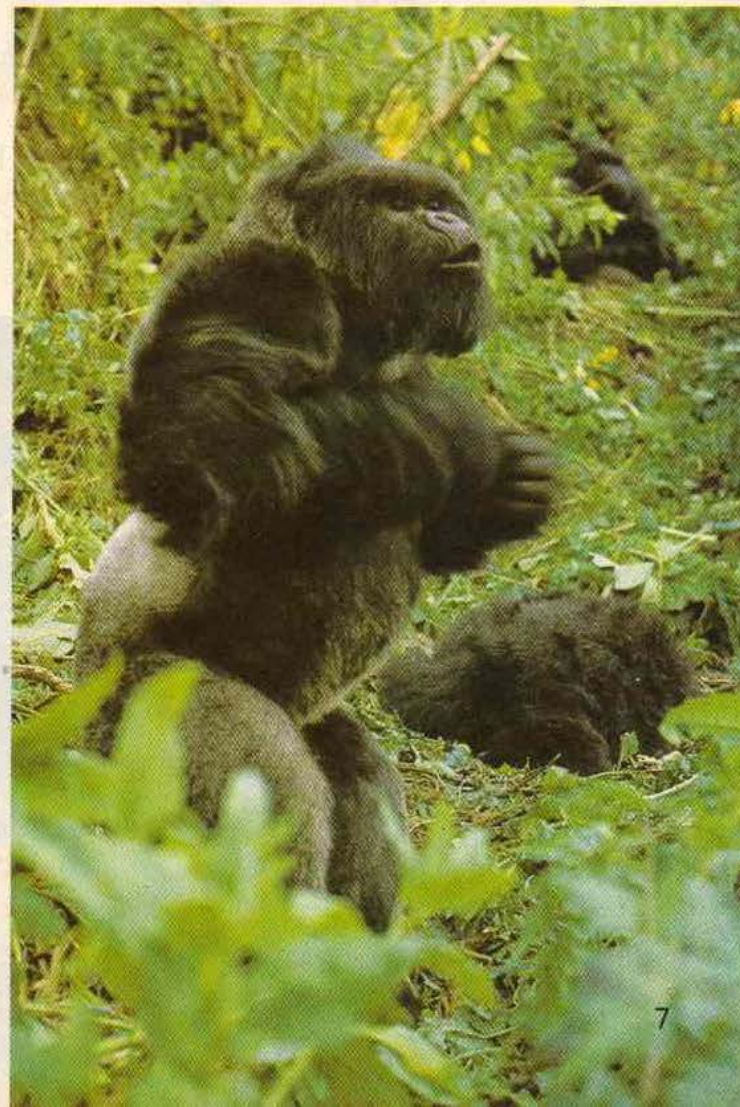
Then one day tragedy struck. Some poachers came after Digit's family. The illegal hunters wanted to capture a gorilla to send it off to a zoo. Digit tried to protect his family from these attackers. For his efforts, he was killed. "It was a terribly sad moment for me," recalls Dr. Fossey.

To help save other mountain gorillas, Dr. Fossey organized poacher patrols. Each day they would go out and destroy the wire traps the hunters set to capture the animals.

Besides poachers, the mountain gorillas are also facing other dangers. They are running out of room to roam and to graze. The area in which they live is very small—only 25 miles long, and from six to 12 miles wide. As people move into the gorillas' lands, the animals are pushed into even smaller areas. Their food supplies are being destroyed to make way for farms and homes.

Today, there are only 230 mountain gorillas in the world. "They may be the only species ➤➤

Dr. Fossey nursed these two young gorillas back to health after they were captured and then released by poachers. Illegal hunters are one of the gorillas' main enemies.



When a gorilla beats its chest, it usually means it is scared or alarmed.

Gorillas spend much of their day resting and sunbathing.

Each day, Dr. Fossey typed up her field notes–all she had seen and done. Her dog, Cindy, and her blue monkey, Kima, keep her company in her outdoor office.

of animals to be discovered and to die off in this century," Dian Fossey explains.

"That would be a tragedy," she continues. "The mountain gorilla is an intelligent animal with many human-like feelings."

To explain what she meant, Dr. Fossey shared this story: "Recently I returned to Rwanda after being away for three years. I wasn't sure if the gorillas would remember me. When I approached them, they came over to stare at me. When they recognized me, they made their sound for happiness. One by one, the gorillas hugged me. Then they sat down beside me. It was the most touching moment of my life."

Since that reunion, Dr. Fossey has been back to Rwanda several times. She has written a book about the mountain gorillas. And she speaks to people all around the world about the shy and gentle giants of the jungle. Human beings can hope that her work–and the work of other scientists–will help the mountain gorilla live to see the 21st century.

These gentle and shy gorillas hide among the leaves and vines to stay safe from illegal hunters.

The Bloodhound Gang™

The Case of the Floating Heads

Part Two

by George Shea

In our last episode, Vikki, Skip, and Ricardo went to investigate the sightings of "ghosts" in a "haunted house." The house, the Macduff mansion, was owned by Helen Macduff who had inherited it from her father. Helen hired a ghost hunter named Basil Tripp who used a special machine to find out if the "ghosts" were real. The first night the Bloodhound Gang was in the house, they saw several bluish heads floating in a basement room. Then Vikki woke up in the middle of the night and saw a "ghost" standing beside her in a mirror.

Vikki screamed and ran out into the hall. "I—I think I just saw a ghost," Vikki gulped as Ricardo and Skip dashed out of their rooms.

"Where?" Skip asked.

Vikki pointed to her room. "In there," she said as the three of them edged into the room.

She pointed to a mirror on the wall. "It was standing beside me in this mirror," she said.

"Maybe you just had a nightmare," said Ricardo.

"No, I *saw* it," said Vikki. "Right there...on the glass."

Skip looked thoughtful. "Interesting," he said. "All these ghosts have some connection with *glass*."

"What are you talking about?" Ricardo asked.

"The ghosts in the basement were near the *windows*," Skip continued. "Now Vikki just saw this ghost in a *mirror*. Mirrors and windows are both made of *glass*."

"Let's take another look in the basement," suggested Vikki.

Just after dawn, the Gang headed for the basement room where they had seen the bluish floating heads.

"The heads appeared back there," Ricardo pointed out as they reached the room, "right where those windows are."

The fearless trio walked up to the windows. Suddenly, Skip paused in front of one dusty window. "Look here," he said. "It's just ➤➤

what I thought."

"What do you mean?" Ricardo asked.

"There's something on the glass," Vikki observed.

"And I'll bet you it's a hologram," said Skip.

"A holo-what?" Vikki asked.

"Look closely at the glass," Skip urged her.

Vikki saw a thin sheet of plastic stuck to the glass. She carefully peeled it off and held it up to the light. Immediately she saw what appeared to be a person's head floating just on the other side of the plastic.

An Important Clue

"That's a hologram all right," nodded Skip as he took it. "It's a piece of film that has been exposed to light in a special way, probably from a laser. From most directions it looks as if it is only a piece of plastic. But when light shines through it, you see a three dimensional picture that floats in space. They call this type of hologram a *transmission* hologram because the light has to pass through it to give you the picture."

"That explains those ghostly heads we saw last night," said Vikki.

"Look," exclaimed Ricardo as he peered closely at the glass. "There's *another* set of windows behind this one. There are actually two walls with two sets of windows in them."

Ricardo raised one of the windows with a hologram on it. "Come on," he said, "Let's see what's behind here." He climbed through the open window, and Vikki and Skip followed him. Sure enough, on the other side of the window, they found an arrangement of special lights. They also found a tape deck and a stereo system. "That explains last night's screams and moans," said Ricardo. "Someone recorded them on tape and played them back through the stereo system."

Vikki had a sudden thought. "What about the ghost I saw in the mirror upstairs?" she asked.

"That was a hologram too," said Skip.

"But we all looked in the mirror," said Vikki. "There wasn't any hologram on it."

"What if someone peeled the hologram off the mirror when you ran out of the room?" asked Ricardo.

"They could have sneaked into your room when you fell asleep," suggested Skip, "and stuck the hologram on the mirror. Then, when you dashed out, they could have peeled it off again."

"But we didn't see anyone come out of my room," said Vikki.

"Maybe they hid in a closet," suggested Ricardo.

"Come to think of it...I thought I saw someone moving around in the dark when I first woke up," said Vikki. "It looked like Burlingame the butler."

"It's possible..." said Skip. "He hasn't been very friendly to us."

"I'd say the hologram on the mirror was a *reflecting* hologram," said Skip. "Holograms like that are lit up by light that hits them from *in front*."

"That sounds about right," said Vikki. "I remember I didn't see the face in the mirror until I turned on the light switch."

"Hey," said Skip, "Look at this." He pointed to a horseshoe-shaped piece of metal that was fastened to the back wall. There were electrical wires attached to it that led to a small electric transformer.

"What's that all about?" Ricardo asked.

The Trap Is Set

"It looks like an electromagnet," said Skip as he whipped out his pocket compass. "Look. My compass needle is pointing right in the direction of the magnet. A strong magnet will attract a compass needle so that instead of pointing north, the needle points in the direction of the magnet."

"Remember Basil Tripp's Ghost-o-meter?" asked Vikki.

"Yeah," said Skip. "That phony ghost hunter said his meter could detect ghosts by picking up changes in the electric particles in the air."

"I don't know if Tripp is behind all this. But someone has been pretty clever," said Ricardo. "And it looks like whoever they are, they're trying to drive Helen out of the house."

"But how can we find out who is doing it?" asked Skip.

"Let's set a trap," replied Vikki as she carefully stuck the hologram back on the window.

That afternoon, the Gang got together with Helen Macduff, Basil Tripp, and Burlingame.

"We're not convinced the 'ghosts' are real," Ricardo announced. "We've decided to go get some special equipment to make a complete study of the basement."

"We're really going to take a close look around the windows down there," Skip added.

"May I ask why you are so concerned about the *windows*?" asked Burlingame.

"Just a hunch," answered Vikki with a shrug. "After all that's where the ghosts have been sighted."

"What sort of special equipment are you planning to use?" Basil Tripp wanted to know.

"We can't talk about that yet," said Ricardo. "But we'd better get going if we're going to bring it back here before dark."

The Gang walked out the front door and down the driveway. But a few minutes later, they doubled back to the rear of the house. Vikki ran over to a small green door and opened it. "Quick! In here!" she said. They all slipped inside the basement. Then they hid behind a pile of furniture in the back room and waited.

About twenty minutes later, they heard footsteps. Basil Tripp entered the room. Behind him was Helen's sister, Cleo Macduff. Right away, Tripp started to peel a hologram off the window.

Quickly Ricardo took out his camera and started snapping pictures. At the sound of the clicks, Tripp and Cleo Macduff whirled around. "What are you doing here?" Tripp demanded angrily.

"Just getting pictures of the two of you trying to destroy evidence," said Ricardo.

"Where's that phony Ghost-o-meter machine of yours?" Skip asked.

The Gang Gets The Picture

"Give me that camera!" yelled Cleo. She and Tripp started after Ricardo, but the Gang headed out the green door. Tripp and Cleo bolted after them but ran straight into the arms of the police. Vikki had secretly called the cops just before the Gang left the house.

After questioning, Basil Tripp confessed he had been hired by Cleo to drive Helen out of the house by making her believe the place was haunted. He also admitted that his "Ghost-o-meter" was really nothing more than a black box with a set of compasses inside it. To make it show the presence of "ghosts," he had planted the electromagnet in the basement.

Cleo told the police she was jealous because her sister inherited the mansion and the family fortune. "I worked hard all my life," she told them, "while my sister did nothing. I deserved both the house and the money, and I was determined to get them."

Later, in the Bloodhound Gang office, Vikki, Ricardo, and Skip were looking at the photographs Ricardo had taken of Cleo and Basil Tripp.

"Pretty neat pictures," said Vikki. But Ricardo sighed and put them away in a desk drawer. "Oh, they're all right," he muttered. "They just seem...so *flat*."

"Hey," said Vikki. "If you want a 3-D effect, you should make *holograms* instead of *photographs*."

"All you have to do is buy some special laser equipment," said Skip.

"I wonder how much that would cost?" Ricardo asked.

"Only about ten thousand dollars," replied Skip.

Ricardo sighed again. "I guess for now," he said, "I'll stick with my plain old $13.95 automatic."

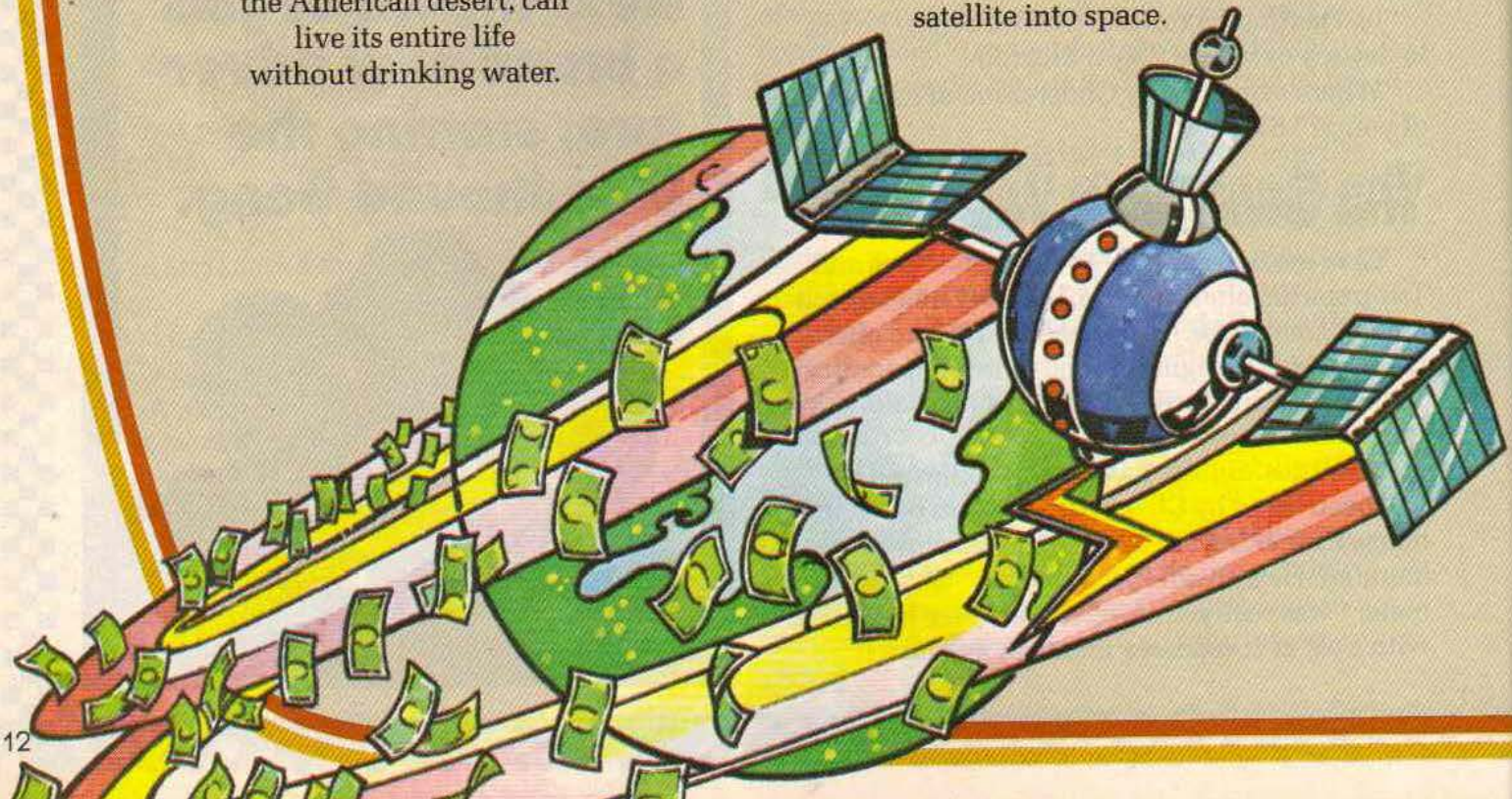
Next month begins a brand new adventure, starring the Bloodhound Gang.

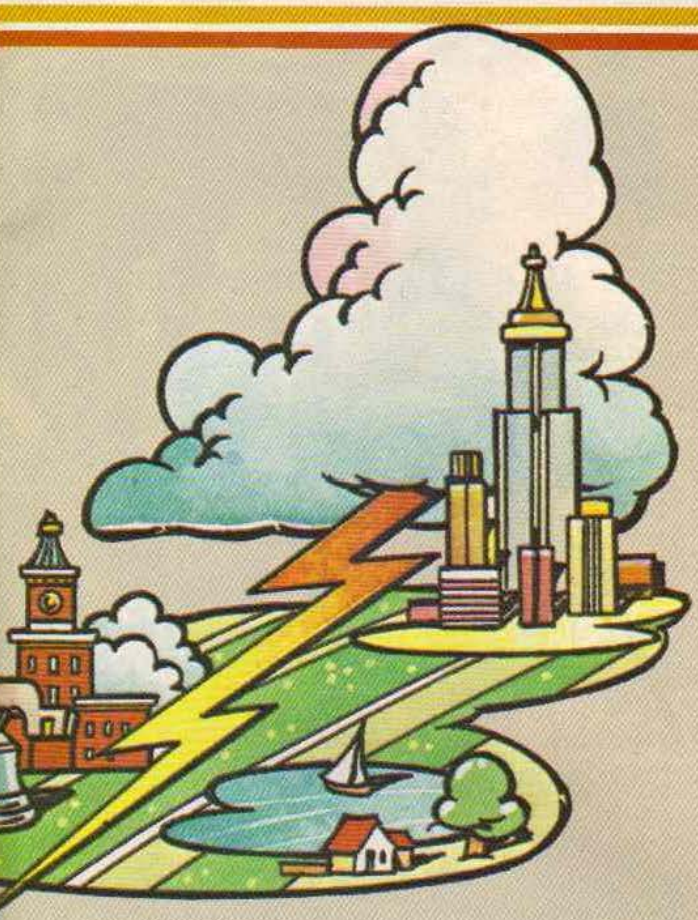
Factoids

The kangaroo rat, which lives in the American desert, can live its entire life without drinking water.

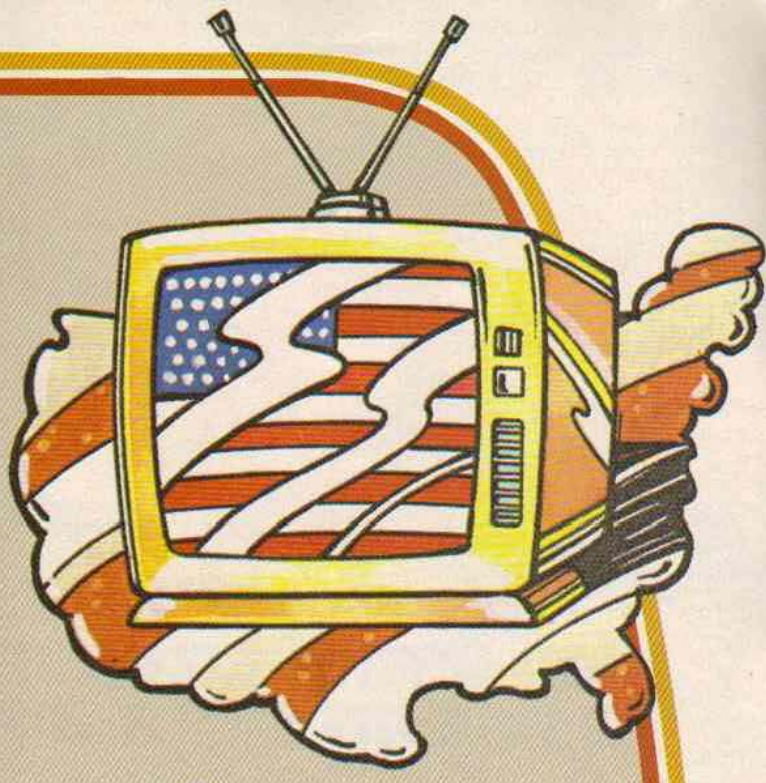
Nine out of 10 people in the United States get a cold every year.

It costs $40 million to send the average satellite into space.

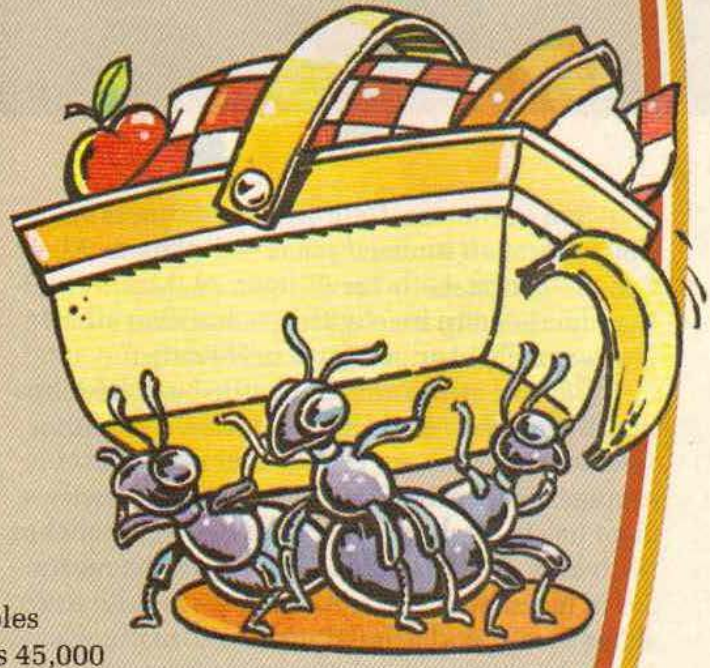




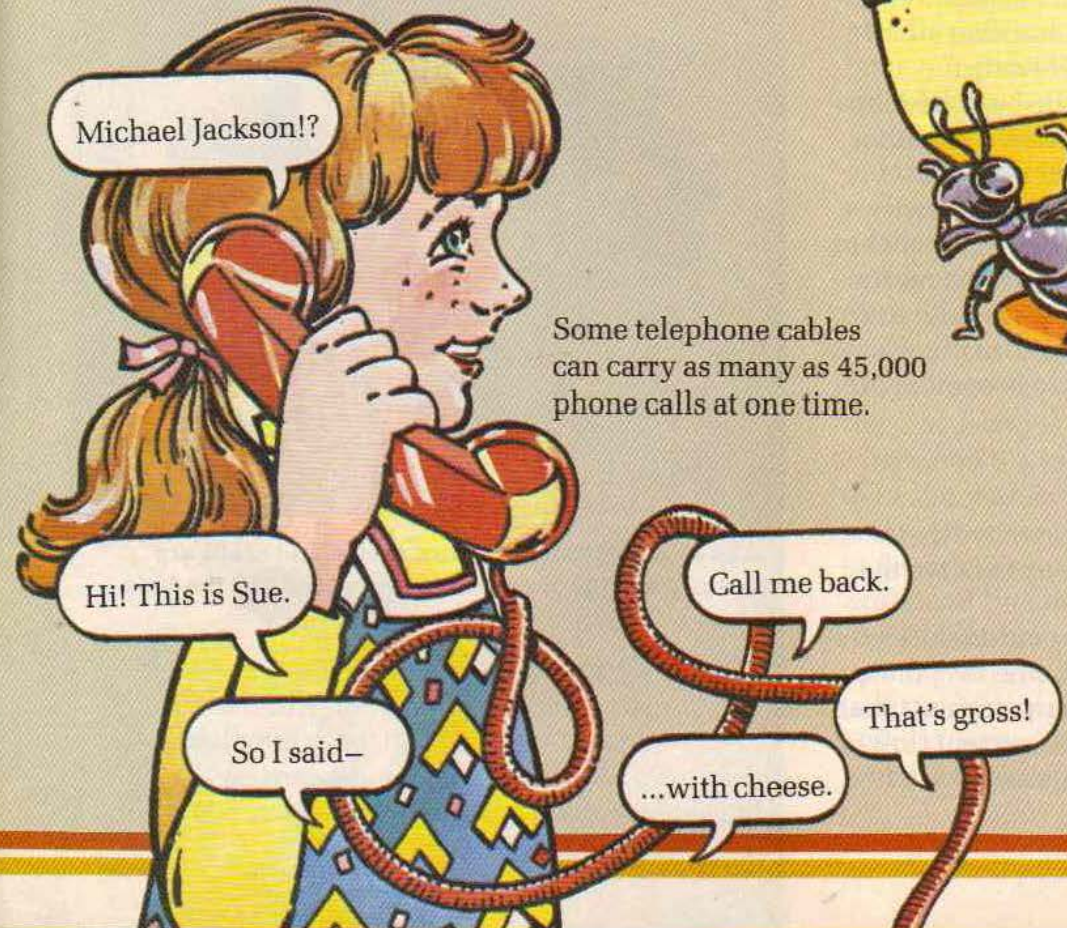
A bolt of lightning can be 100 miles long.



One third of all the TV sets in the world are in the United States.



An ant can lift objects 50 times its own weight.



Some telephone cables can carry as many as 45,000 phone calls at one time.

Secrets of the Beach

KIDS UNCOVER CLUES TO LIFE ON THE SHORE

In San Francisco, California, kids are playing detective at an unusual place—the beach. Their "chief" is Elizabeth Terwilliger, 74. Mrs. Terwilliger has been in love with beaches ever since she was a child growing up in Hawaii.

Today she still finds beaches to be mysterious and wonderful. And she still learns something new on almost every visit because beaches change constantly. For 30 years, Mrs. Terwilliger has been sharing her knowledge of beaches with kids. She helps them to unlock the mysteries of beach wildlife and ocean waves and tides. After kids spend a day tracking down clues with her help, they are on their way to becoming lifelong beach lovers, too.

Watching Out for Waves

First kids roll up their jeans, remove their sneakers and socks, and get ready to brave the waves.

"Watch out, those big waves could knock you down," warns Mrs. Terwilliger. She says that some beaches have fast, strong *rip currents* that could sweep people away as the current flows back out to sea. "So never turn your back to the ocean," she advises.

Above and Right: Starfish, shells, and crabs are just some of the beach discoveries made by the kids.

But the kids soon realize that most waves are not dangerous. And each wave is different from the one before. To prove that, each member of the group picks up a stick for measuring. As the kids kneel, Mrs. Terwilliger explains, "See, your

stick shows that each wave comes to a different spot on the sand. And some waves hit the stick with a lot more force than others."

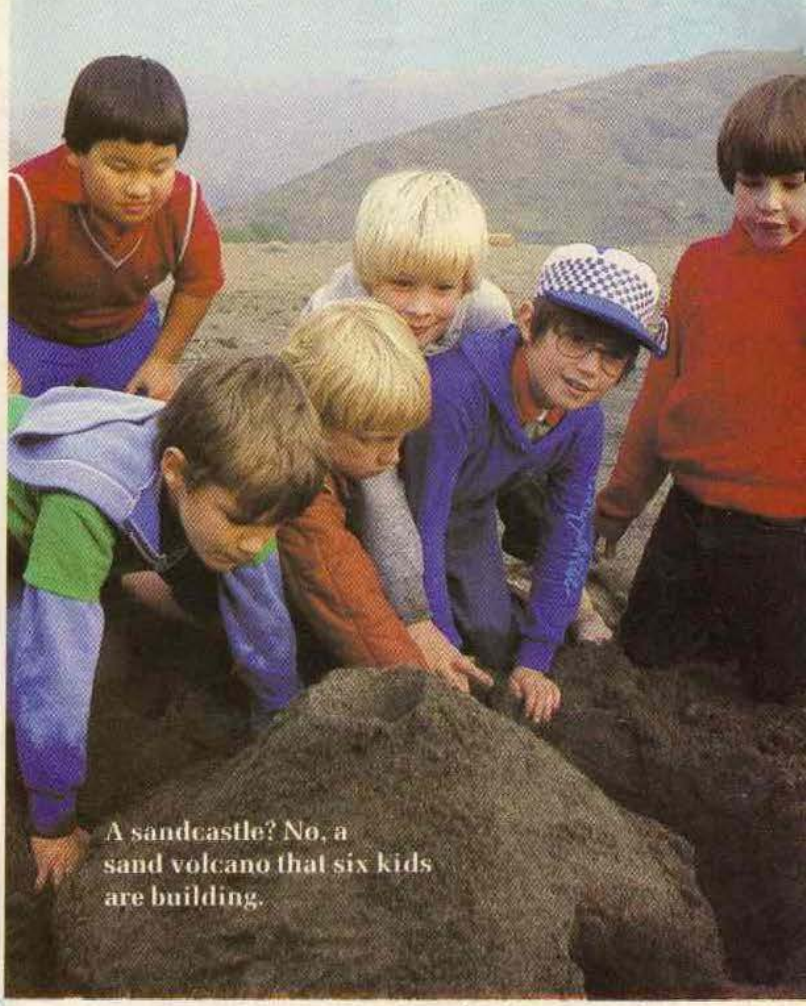
Soon everyone notices that little pools are left on the beach when the waves wash back out to sea. "What's that?" asks a girl, pointing to a pool that sparkles in the sunshine.

"It's a tide pool," says Mrs. Terwilliger. "Come on, lets build one of our own so you can see how it works." Soon sand is flying everywhere as the kids build a low wall. A wave rolls in, and the water gets trapped by the sand wall. The kids have built an artificial tide pool.

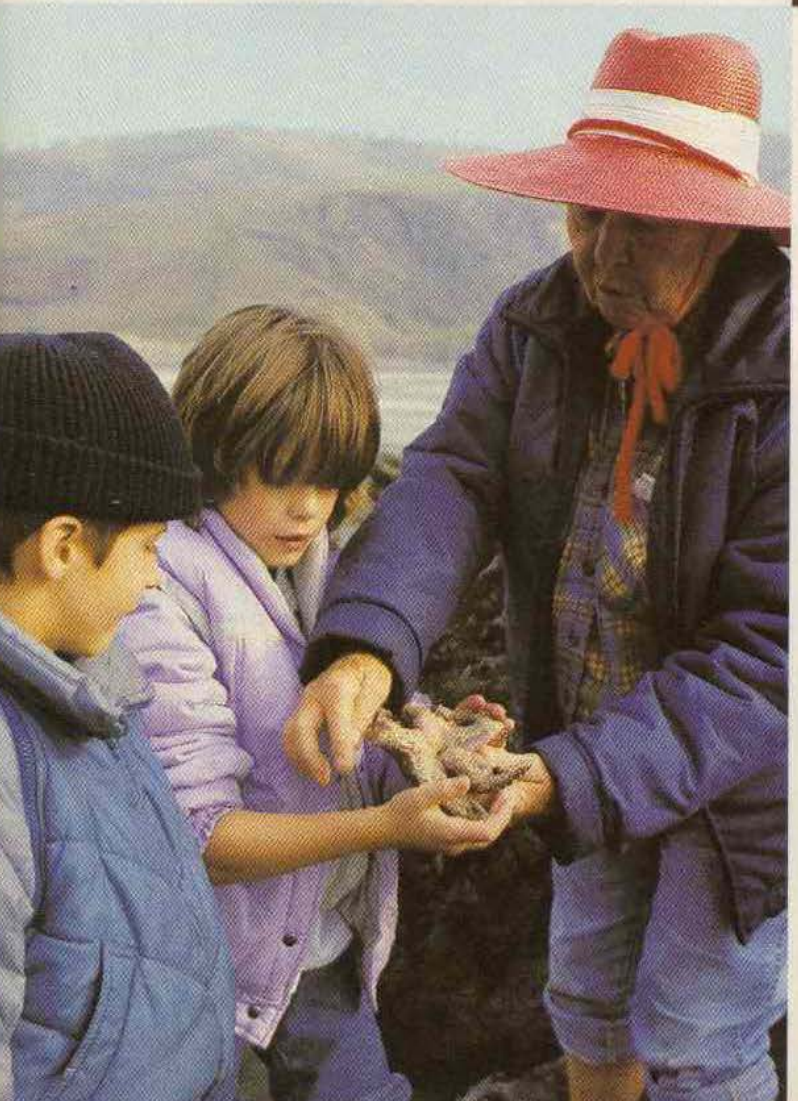
Everywhere the kids look, they find clumps of seaweed on the beaches. Some is green and some is brown. Picking up a green kind, Mrs. Terwilliger encourages them to sample its sour, salty flavor. She knows this one is safe to taste.

Then Mrs. Terwilliger grabs a strip of giant brown seaweed about 12 feet long. She swings the *bull kelp* in a circle as the kids play jump rope. Other kelp is used to make ice cream.

While some kids jump rope, others climb over a big stack of wood. "Where did all this wood



A sandcastle? No, a sand volcano that six kids are building.



come from?" asks a girl.

"Some lumber companies cut down trees and float them down the rivers along the coast," says Mrs. Terwilliger. "They plan to pick up the logs later, but some get swept out to sea. The waves washed the driftwood back ashore here."

The kids look for clues to identify the different kinds of driftwood. They check out some soft wood that's a rich brown in color. "It's from a redwood tree," says one.

But a hard gray wood stumps them. Mrs. Terwilliger provides a clue. "These trees produce certain chemicals that are put in cough drops," she says. Mrs. Terwilliger finally admits the gray wood is eucalyptus.

By noon the kids are starving. They pull out their lunches and settle down on some large rocks. Offshore they can see tall strange-shaped rocks called *sea-stacks*. Mrs. Terwilliger explained that their name comes from their resemblance to smokestacks. Thousands of years ago, these rocks were once cliffs along the coast. Now they're offshore because parts of the coast *eroded* or washed away into the sea.

"Look!" shouts one girl as she points out to sea. "A whale!" Sure enough, a gray whale is ➤➤

Left: To explain how sea birds fly, Mrs. Terwilliger asks a group of kids to imagine they have wings.

Below: When the tide goes out, these rocks are a good place to climb and explore.

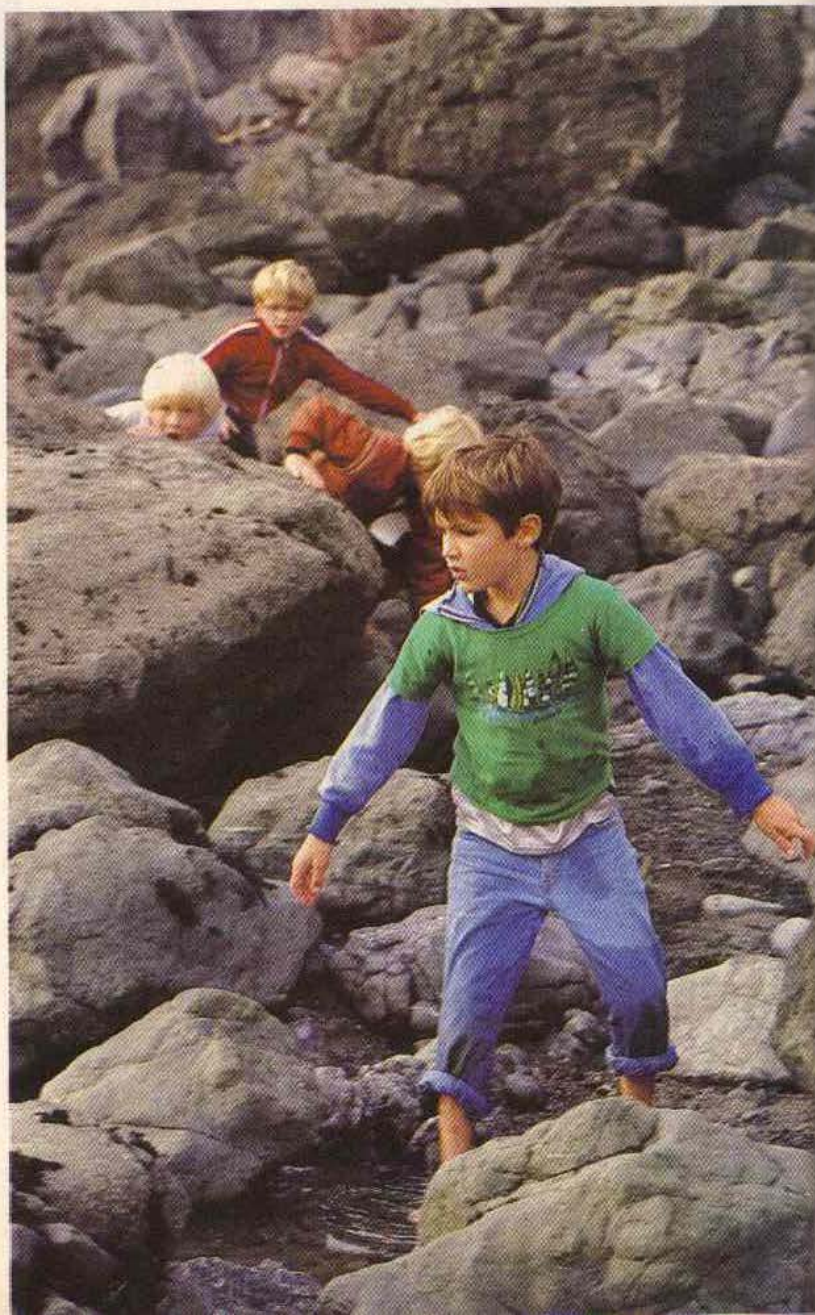
swimming far offshore. White sprays of water shoot up from the blowhole in her head. "That's called *spouting*," Mrs. Terwilliger says. "Whales do it when they come to the surface to breathe."

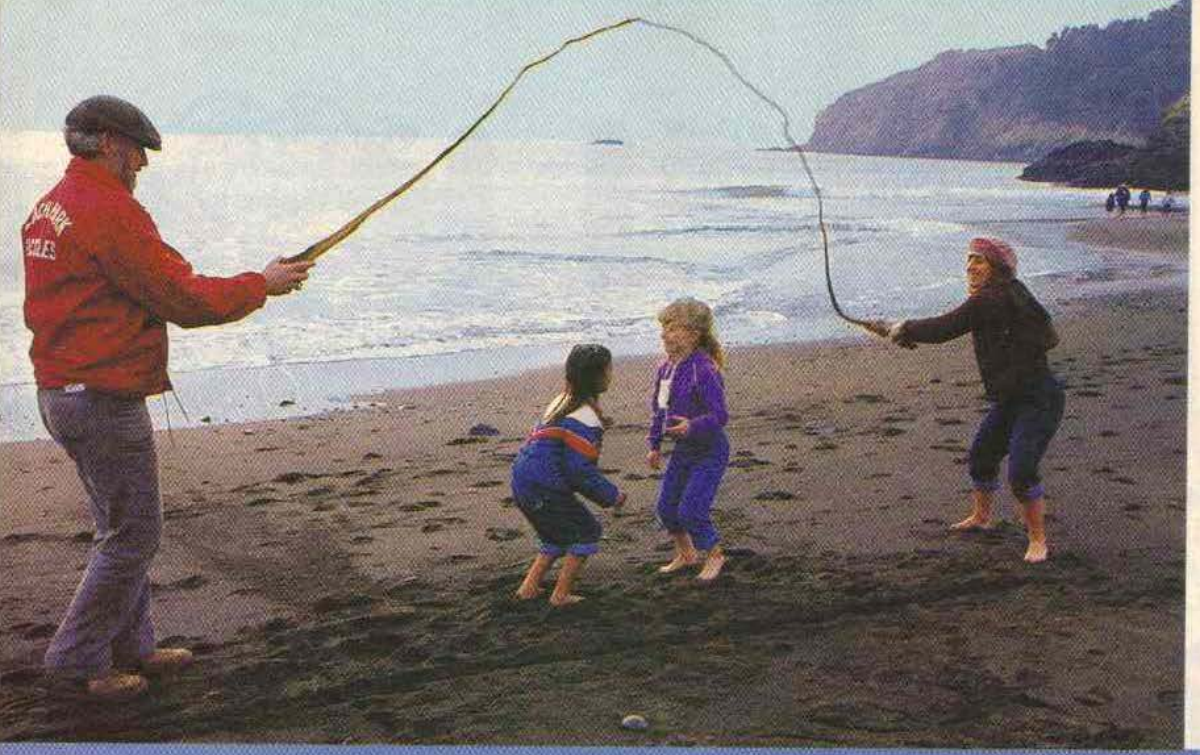
After some more whale spotting, the group explores more of the beach. That's when they discover a dead bird lying on the sand. "What happened to it?" the kids ask.

"Let's see if we can figure it out," replies Mrs. Terwilliger. One boy thinks he sees oil on the bird's feathers. "Oil might come from pollution that drifts on the ocean or settles on the beach," agrees Mrs. Terwilliger. "It would weigh this bird down and keep it from flying." A girl adds that a bird sometimes drowns because its foot gets caught in a fishing net.

Finding a dead bird is sad, of course. But the experience makes this group of kids want to learn more about how they can help to preserve beach wildlife. And that's important. Too many of America's beaches are in trouble because people use them carelessly. What is needed if the beaches are to be taken better care of in the future is people like Mrs. Terwilliger and the kids she takes on tours—people who understand beaches and care about them.

Before the day ends, there's one more beach mystery that Mrs. Terwilliger wants the group to solve: How to get the sand off their feet. "Find some tall grass and then step backwards, forwards, and sideways a couple of times," she says. As the kids stomp around, she adds, "See, this grass is nature's handiwipes!"





Seaweed sometimes grows in such long strips that it can be used for jumping rope.

Saving Our Shores

Learning about beaches is fun. But just as important, it can help preserve them—as one group of young people in Florida is doing.

About a year ago, Jenn Gast and her friends heard that their favorite Fort Myers beach was washing away. They wanted to know why. So Jenn and her friends went down to the beach regularly and looked at how it was being used.

The kids observed that cars and motorcycles were allowed to drive there. The traffic was loosening the sand and causing the beach to erode or wash away. Jenn and her friends joined in a local campaign to save the beach. They wanted Fort Myers to make the beach off limits to vehicles. And the group won! Now a law protects the beach from traffic.

Could the damaged beach be repaired? The kids learned that planting tiny mangrove seedlings might help. These plants grow in shallow salt water. Their roots sink into the sand and absorb some of the energy from waves that crash ashore. Mangrove plants act like an anchor to hold down the beach and prevent more erosion.

So Jenn and her friends set to work, putting out as many as 10,000 seedlings in a single morning. For the beach at Fort Myers, these kids went to the rescue just in time!

–by Edith Pendleton

Florida teenagers planted mangrove seedlings to help keep the Ft. Myers beach from washing away.

List of the Month

Going Ape

by Joanna Foley

You've already read that in real life, apes are smart, gentle creatures. But in movies and books, they are often dumb and fierce. Here's the scoop on some real big apes from fact and fiction.

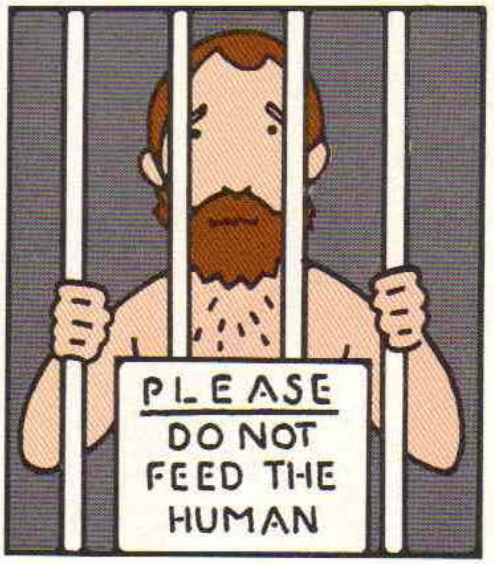
What's Your Sign? Two scientists taught a chimp named Washoe to use sign language. They wanted her to communicate with people. She seems to. But does Washoe understand what she's saying? Some scientists say yes. Others disagree. In any case, this chimp can make over 132 different signs. One of her favorites is "Please tickle."

Kong in Video Land A movie screen isn't the only place you'll see a gorilla named Kong. There's also the video game screen's Kong. In the game, Donkey Kong captures a girl, then heaves barrels at a boy who's trying to rescue her. Kong keeps appearing in new video games, too– Donkey Kong, Jr., Donkey Kong II and Donkey Kong III.

Calling All Kongs Who's the biggest, baddest of all movie apes? King Kong—star of one of the most famous movies ever made. When he climbed the Empire State Building, it took a squadron of planes to shoot him down. Later King Kong returned to the screen in a new movie. This time Kong was shot down from the World Trade Center. That's moving up in the world!

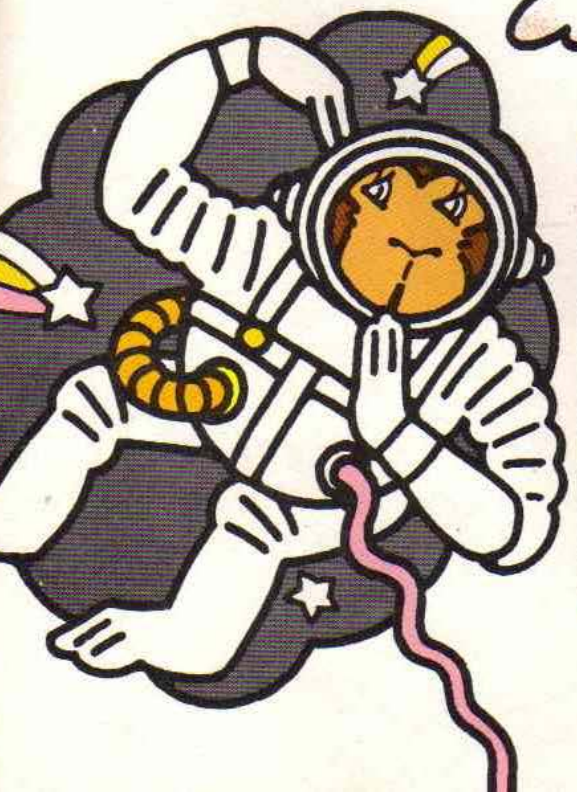
Monkey in Space Did you know that the first U.S. astronaut was a monkey? In 1959, Miss Baker, a small squirrel monkey, became the first creature to blast off in a NASA rocket. Wearing a special spacesuit and helmet, she returned 15 minutes later —calm enough to eat a banana and go to sleep! Miss Baker's safe trip helped pave the way for human astronauts.

Who's in Charge Here? Imagine a world where chimps and gorillas rule. It exists in the movie "Planet of the Apes." These apes are usually wise. But they sometimes go slightly bananas, capturing people for experiments or putting them in zoos. One chimp even puts a new twist on the old saying about monkeys when he snarls, "Human see, human do."

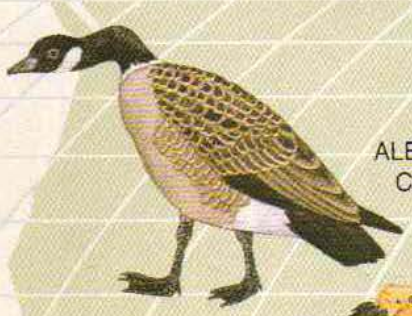


Me Tarzan, You Kala Kala? Who's Kala? She's an ape who adopts Tarzan, a human orphan in the book, *Tarzan of the Apes*. Like other mothers, Kala worries about her son. After all, he's smaller and slower than the ape children of her friends. But she's sure that someday Tarzan will be a real swinger. Mom is right! Tarzan grows up to become king of the jungle.

World's Biggest Snowflake Most gorillas have brown or black hair, but not Snowflake. He's the world's only white-haired gorilla. He's called an albino (al-BY-no). Other animals can also be albinos, and so can people. But Snowflake is the world's first albino gorilla. That's what has made him a star at a zoo in Spain for nearly 20 years.



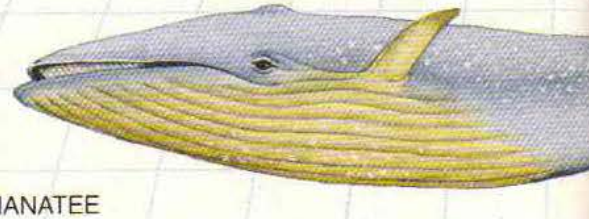
A Star is Born Patty Cake was the first baby gorilla ever born in a New York City zoo. People were eager to see the 4½ pound gorilla because her birth was so rare. That's because gorillas breed better in the wild than in zoos. But Patty Cake's parents, Lulu and Kongo, beat the odds. Now their daughter is a healthy gorilla who weighs 200 pounds. More like Fatty Cake!



ALEUTIAN CANADA GOOSE

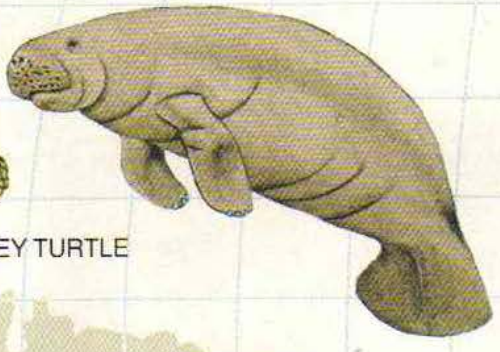
RED WOLF

BLUE WHALE

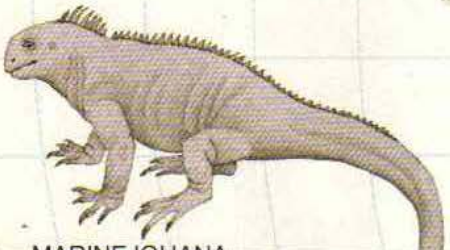


CALIFORNIA CONDOR

FLORIDA MANATEE



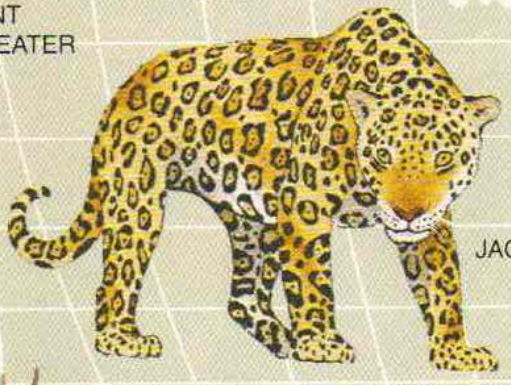
ATLANTIC RIDLEY TURTLE



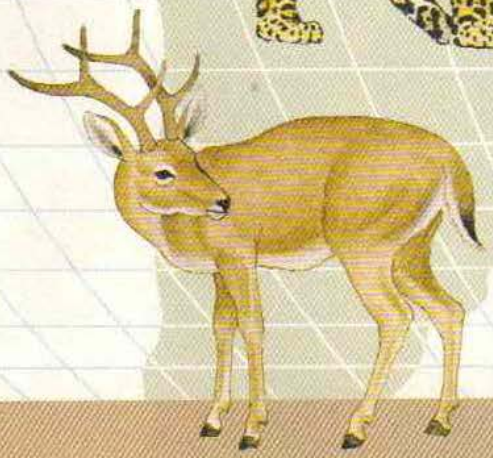
MARINE IGUANA
(Galapagos Islands)

GIANT ANTEATER

ANIMALS IN DANGER



JAGUAR



ARGENTINE PAMPAS DEER

Here are just a few of the thousands of endangered animals in the world. Some species are being killed by poachers–illegal hunters. Other are dying out because their food supplies or homes are disappearing as people take over the land. Do you know any other endangered animals? Add their pictures to the map.


POLAR BEAR
SIBERIAN TIGER
PEREGRINE FALCON
MEDITERRANEAN MONK SEAL
GIANT PANDA
PYGMY HIPPOPOTAMUS
NILE CROCODILE
ASIAN ELEPHANT
CHEETAH
JAVAN RHINOCEROS (Island of Java)
MOUNTAIN GORILLA
RING-TAILED WALLABY
GOLDEN-SHOULDERED PARROT
MOUNTAIN ZEBRA

Any Questions?

by Mary Tota

How does a bee make its hive?

It takes more than one bee to make a hive in a hollow tree or other natural opening. Thousands of bees work to build their home—a waxy nest made of six-sided rooms, or cells.

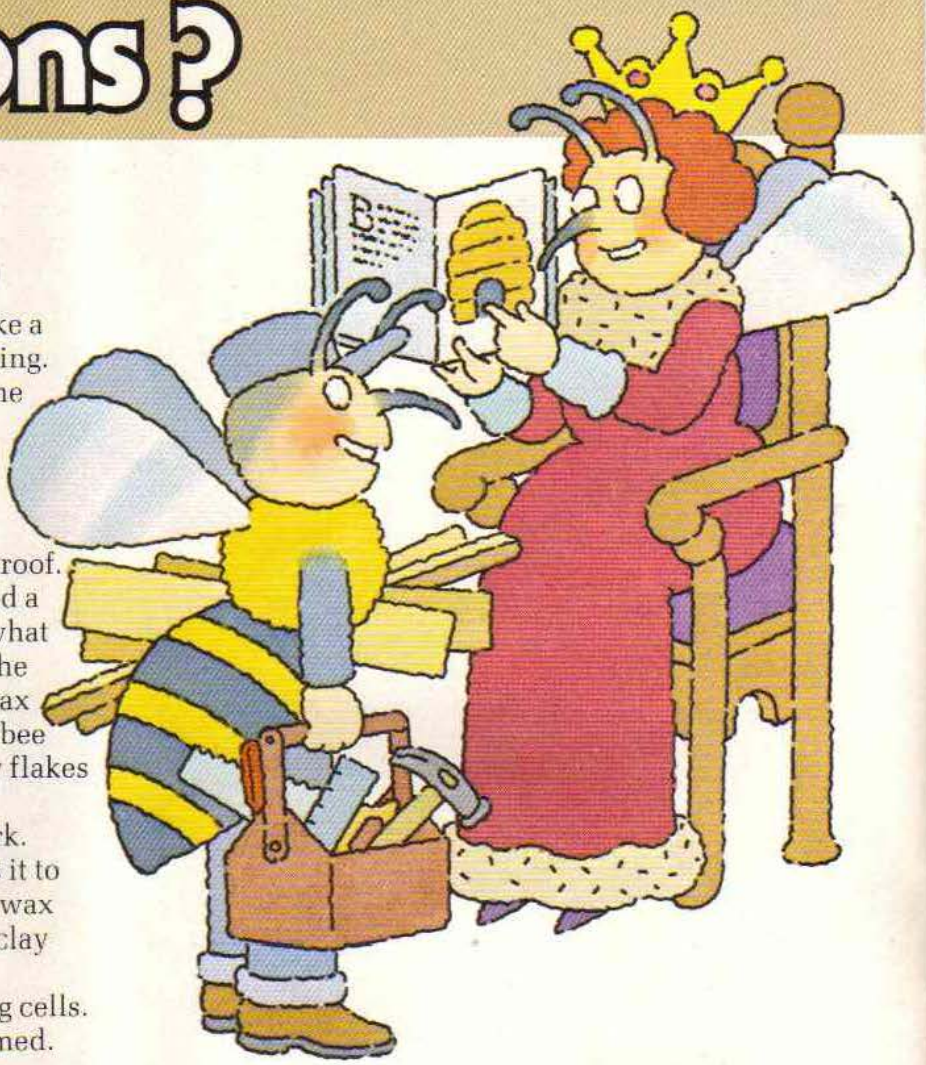
The six sides of the honeycomb are space-savers. They fit right next to each other. And they help keep the hive waterproof.

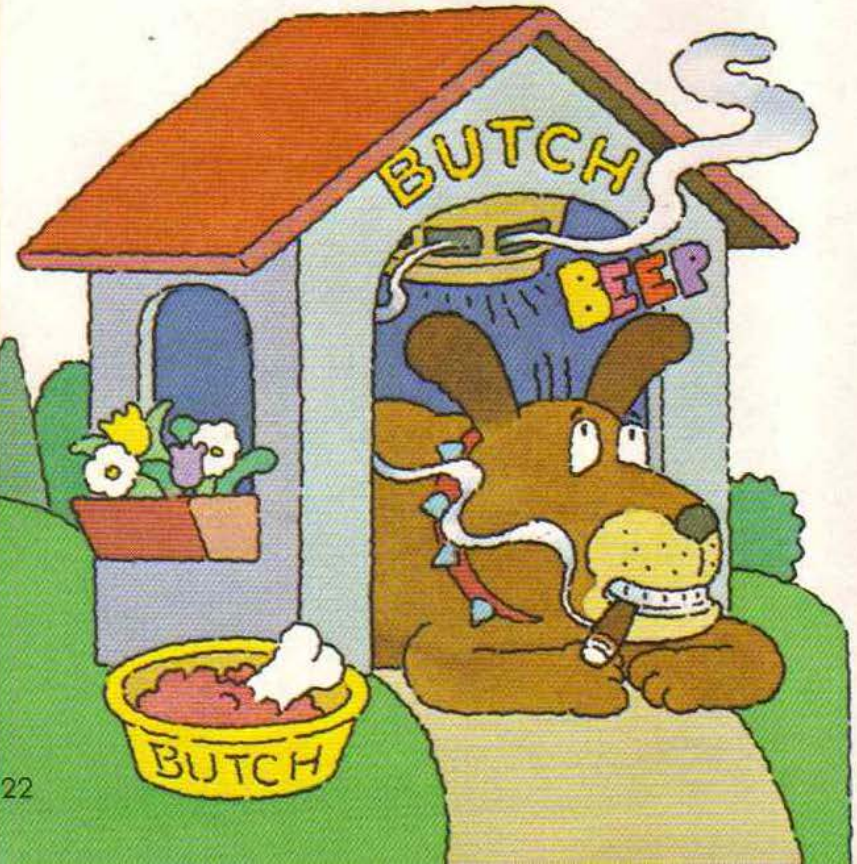
When a female worker bee wants to build a hive, a gland in her abdomen knows just what to do—make wax. The beeswax oozes to the outside of the bee's abdomen. There the wax forms tiny white flakes. With her legs, the bee picks off some flakes. She moves the waxy flakes to her jaws and chews.

Then the bee really puts her head to work. When the wax is soft enough, the bee adds it to the honeycomb. She pushes and butts the wax with her head—much the way you shape clay with your fist.

At the same time, other bees are building cells. And in a few hours, the honeycomb is formed.

Question sent in by Brian Strahm, Athens, GA.





How does a smoke alarm work?

Smoke alarms do what you can't trust your nose to do. They sniff out the first traces of smoke and warn you before flames get too close.

Since smoke rises to the ceiling, that's where these alarms are installed. The openings on their sides and cover let air enter. Inside are parts that detect the early signs of a fire.

One kind of smoke detector works with a beam of light and an electric eye. Usually the beam doesn't shine on the electric eye. But let's say there is a fire. The smoke drifts up and inside the alarm. The beam of light bounces off the smoke particles. Some of the light reaches the electric eye, and BEEP!—the alarm goes off.

Other smoke detectors use a tiny bit of radioactive material. This material charges up the air inside the smoke alarm so that electricity can flow through it. When smoke fills the air, it blocks the electric current. That signals the alarm to buzz. And you know it's time to get out —fast.

Question sent in by Judy Whalen, Chicago, IL.

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

Why do people snore?

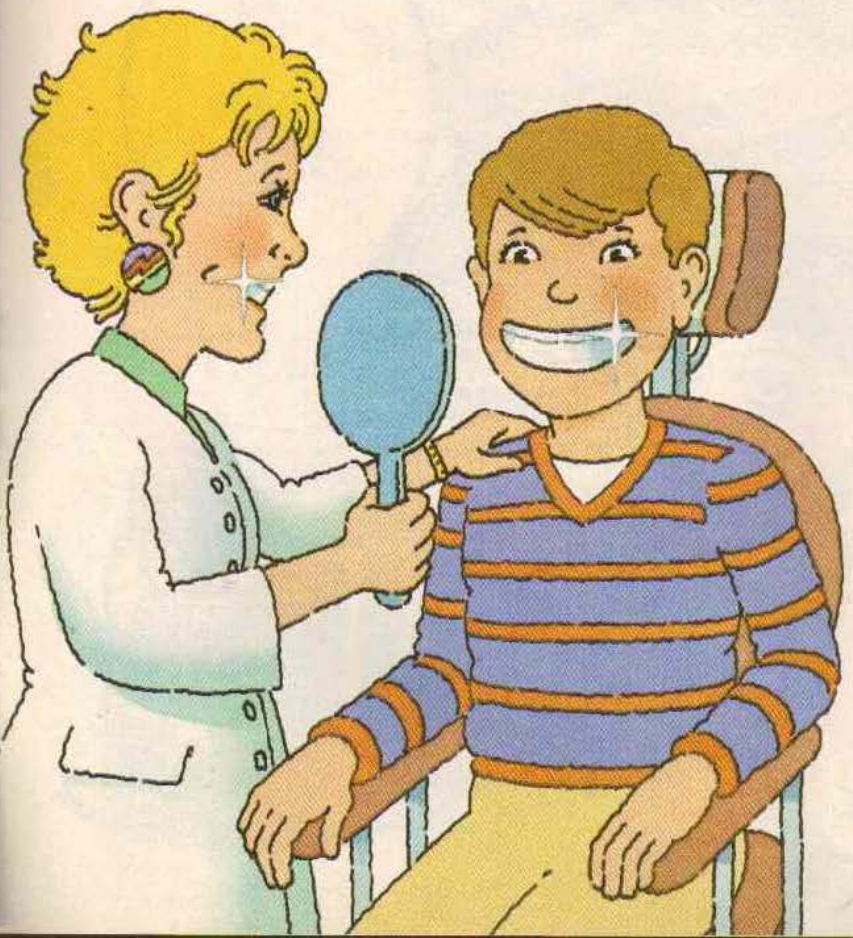
To find the answer to this one, stick the tip of your tongue on the back of your mouth. Do you feel the fleshy area? That's the *soft palate*. During sleep it causes the noisy sounds of snoring.

With each breath, the palate vibrates as air moves across it. This creates snoring sounds the same way air rushing from a balloon makes sputtering noises when the rubber vibrates.

Snoring is more likely to happen if you breathe through your mouth. If you sleep on your back with your mouth open, you may turn into a snorer.

Some people stop snoring by changing sleeping position. Others even say they sew Ping-Pong balls into their pajamas so they won't sleep on their backs! There's even an anti-snoring machine. When the snorer gets too loud, the machine wakes him with flashing lights and buzzers. Unfortunately, none of these is a sure cure. If someone in your house has an annoying snore, the best idea may be to hand out earplugs.

Question sent in by Janet Hardtmann, Waldwick, NY.



How do braces work?

Chances are you know someone with braces. Four million people in the United States wear them to move out-of-line teeth back to where they belong.

Braces do their job by gently pushing or pulling teeth. The orthodontist—a dentist who fits braces—hooks wires to holders that cement on to each tooth. The doctor adjusts the wires to move the teeth slowly in the right direction.

Each tooth—all the way to the root—shifts in the jawbone. When the teeth get to the correct spot, off come the braces. The jawbone grows around the root and holds it in the new position. This doesn't happen overnight. It can take a couple of years or more for teeth to straighten out.

Some of the newest braces are out of sight. Instead of hooking on to the front of the teeth, the wires go on the back. And brace yourself for this invention: A tiny battery attached to the braces sends electric currents to the gums. The electricity, which you don't feel, helps the teeth to straighten out faster. That's one way to get an electrifying smile!

Question sent in by Lisa Gonzalves, Fremont, CA.

WHAT IN THE

NEW IDEAS TAKE OFF AT THE WO

by Lisa deMauro

The fairgrounds were in darkness. The people in the crowd were silent. Some of them held their breath. An exciting event was about to take place. Suddenly a switch was thrown. The fair was ablaze with light! People couldn't believe what they saw. Everything glowed with the magic of electric light!

This scene took place in 1893, near Chicago, Illinois. A great world's fair was beginning. What made the fair so bright and full of wonder? The new and unfamiliar electric light bulb!

Today, electricity is as familiar to you as your own name. But suppose you lived 100 years ago. What if you had never seen electric lights before? And then, suddenly, there was the Chicago world's fair—lit up like the brightest star. It might be the most exciting thing you ever saw.

The Chicago world's fair—and others before and after it—introduced wonders and inventions which set people to talking and thinking. For the first time people were getting together to share their ideas. These world's fairs became something like giant mirrors. By looking at a fair, you can see a reflection of the ideas. inventions, and events in the world when the fair was held.

Today, world's fairs are still bringing inventions to the public. But they are also doing something else. They are tackling problems that people are facing now—and will be in the future.

In New Orleans, Louisiana, for instance, a world's fair is going on that is dealing with an important and serious problem: conserving water. The fair's theme is "Fresh Water as a Source of Life." Many scientists agree that the

Electricity was hot in 1893...

WORLD!!

RLD'S FAIR

...while water is cool in 1984.

world's people are using up supplies of clean, pure water—fast. How can people make sure there will be enough water in the future for industry, farming, and home use?

Displays and exhibits from many nations are helping New Orleans fairgoers to answer that question. Visitors are getting some firsthand information on saving earth's precious and disappearing water supply. Visitors are discovering ways that governments and businesses are trying to clean up polluted waters. Displays show methods that scientists are experimenting with to turn sea water into fresh water for farming and drinking. Besides these exhibits, visitors can take a ride on the Mississippi, or visit a deep sea oil rig that is built in the middle of the fairgrounds—on dry land.

Where It All Began

The New Orleans fair is just the latest in a long line of fairs. The first was held in England in 1851. Back then there were no telephones, radios, or TV sets. So it was hard to spread the news about inventions. Then some people in England decided to hold a big fair that would bring together inventions from different nations. This way, folks could share their ideas and learn from one another. The progress made in one nation was on display for all to see and take back home with them. ➤➤

America celebrated its 100th birthday by displaying the telephone.

A clear glass building was designed for the first fair. Inside were wonders from 40 countries. There were balloons for flying, steam-powered engines, and false teeth. There was even a new kind of shoe for keeping out the rain—rubber boots. One man, Cyrus McCormick, showed off his new farm machine. It could gather food much faster than people could by hand. When farmers saw the invention at work, they lined up to buy the new machine.

A Birthday Fair

The fair in England was a great beginning, but it wasn't until 1876 that another great world's fair took place. America was 100 years old that year. And what better way to celebrate than by holding a huge birthday party. So plans were made for the Philadelphia Centennial Exposition. (A centennial marks 100 years.)

Visitors saw their first typewriter at the centennial. It was a long way from the computer keyboard. But until then, everything had to be written by hand. There was also another time-saving invention—the telegraph. Using a code, it could send four messages at once. Wouldn't it be great, people thought, not to have to ride to the next town to get a message to someone there.

In 1876, not too many people had heard of Alexander Graham Bell. But he had an unusual invention of his own—the telephone. A fair visitor picked up the phone receiver, not knowing what to expect. When he heard Bell's voice coming through the machine, he jumped up and cried, "Great heavens! The thing talks! "

The early 1900s were also a busy time for inventors. World's fairs reflected their progress.

One new machine was really picking up speed —the automobile. By 1904, there were 160 automobiles on display at the St. Louis world's fair. For people who had traveled by horse, even one car would be a big deal!

Flying airships caught everyone's attention at the fair, too. And people crowded around a gadget called a wireless telegraph. It could send messages through the air! Today that invention is probably sitting in your home. It's a radio.

The World of Tomorrow

By the 1930's,radios and telephones were found in many homes. People no longer stared at automobiles as if the machines were from Mars. With these better ways to communicate and travel, people would find out about new discoveries and inventions without leaving home. That's when fairs began to change and to look ahead to the future.

In 1939, the New York world's fair was filled with ideas for making the future a better place in which to live. "Building the World of Tomorrow" was the fair's theme. For the first time fair planners thought about a problem that was facing our planet. In this case dirty, crowded cities.

Planners built a model city of the future. The builders predicted that by 1960 people would work in the city center. But they would live at the edge of the city, or in the country where the air was clean and where there was lots of room. ➳

At the 1939 New York fair, people asked, "How will we live in the future?"

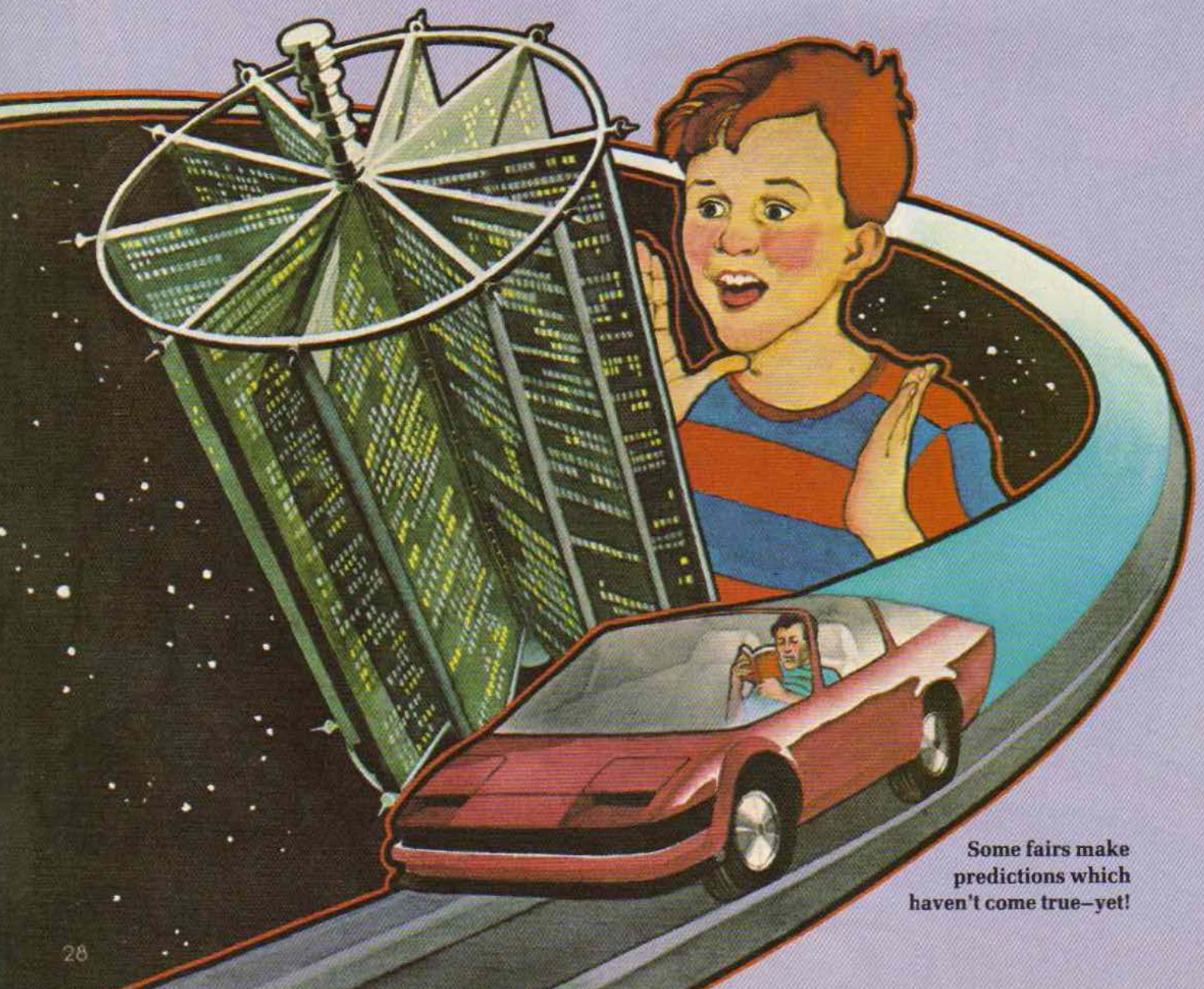
In the model, superhighways linked people's homes with office skyscrapers that rose high above the ground. Cars glided silently by. Moving sidewalks were built above the level of the street. That way, people wouldn't have to cross streets full of traffic.

Of course, no one can predict the future accurately. So not all of the 1939 fair predictions came true. Other fairs made other bloopers. In 1962, the Seattle world's fair predicted that in a few years, computer-controlled highways would stretch from coast to coast. Drivers would input their destinations. Then they'd sit back and relax as the car drove itself.

Another display in Seattle showed a model of a floating space city, complete with a golf course. Some visitors to the fair thought the orbiting city would become a reality by 1980.

At the New York world's fair in 1964, one display showed an electronic weather station. It was buried deep beneath the ice and snow of the Arctic. The station would beam weather forecasts for entire continents. According to the people who put up the exhibit, the station would be working in 1975. But so far, no weather station like theirs has been built.

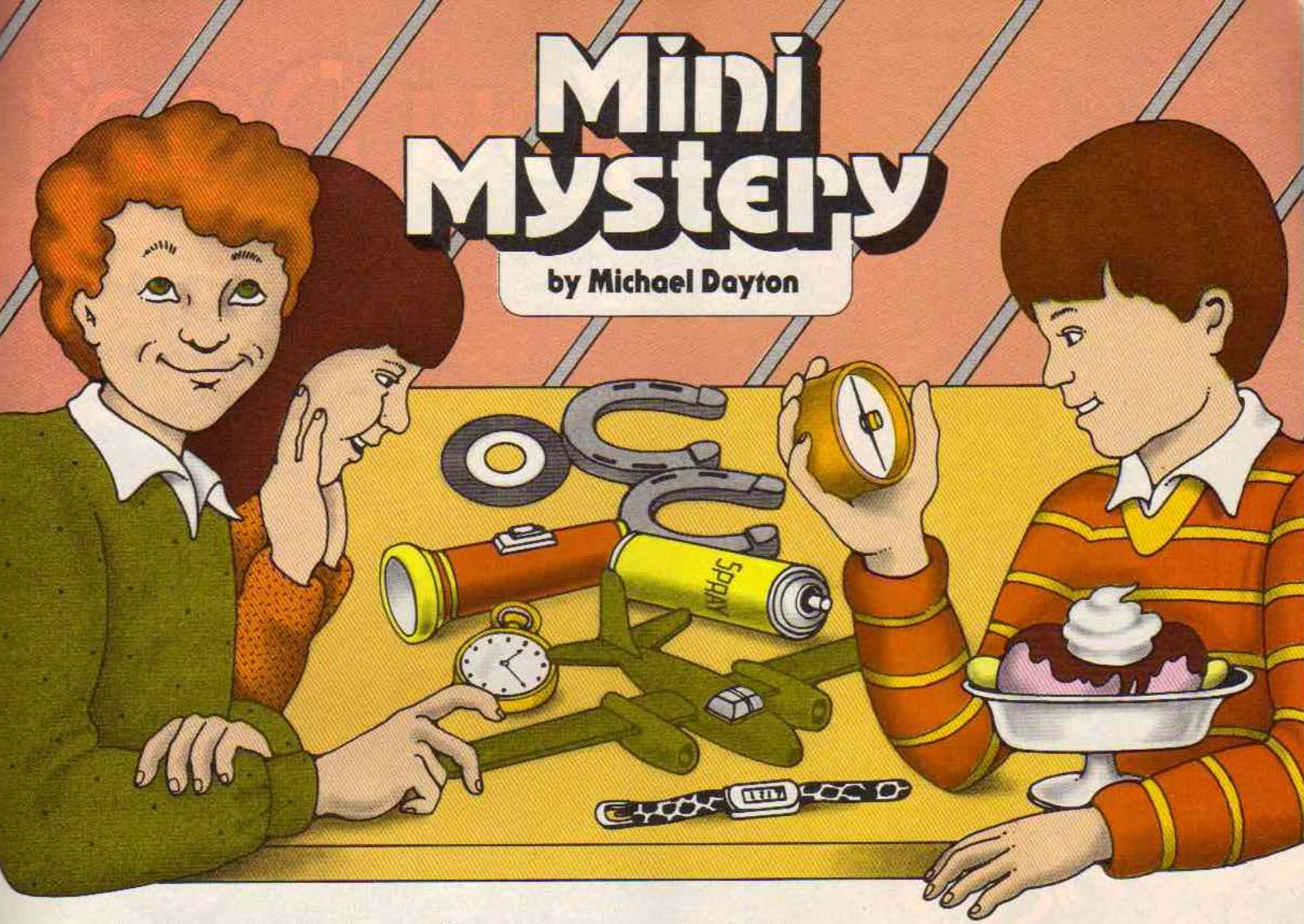
But thanks to all the world's fairs—and to the engineers, scientists, and business people who put them on—one important message has come through. People can make their lives now, and in the future, better by using what they've learned through science. And what better place to show all that's been learned than in an amazing world's fair!



Some fairs make predictions which haven't come true–yet!

Mini Mystery

by Michael Dayton



Ann Gora and her friends were at Fulton's Fountain. Lisa was making short work of her sundae. But Tony's banana split remained untouched. His nose was buried in a book.

"Listen to this," Tony said. "Did you know that the first U.S. world's fair was a flop? It was held in 1853 inside a huge glass building. The roof leaked so badly that the whole show was washed out."

Ann frowned. "Tony, your *brain* is starting to leak. Did you know ice cream melts fast in hot weather?"

Tony put down his book and picked up a spoon. "Whoops, I do get carried away sometimes."

While Tony started his ice cream, "Tricky" Teddy Grayson walked into the shop. Teddy clutched a shovel in one hand. In the other hand he carried a shiny iron box tied up with rope.

"Tricky" Teddy had earned his nickname. He had tried every trick in the book to get his name in the newspapers. But most of his schemes were like untied shoelaces—they always tripped him up.

Lisa eyed Teddy curiously as he sat down in their booth. "What's with the shovel, Teddy?"

Teddy turned to face Lisa. "I'm onto something really hot," he insisted. "I was thumbing through an old book when this letter fell out. Look, it was written by the famous scientist, Lionel Landrover."

Ann, Tony, and Lisa examined the letter. It said:

Dear Finder:

At the 1876 Philadelphia Fair, I saw a time capsule being buried. I decided to bury one in my town, too. On June 31, 1884 (the first day of summer), I buried the capsule in our town park. It contained the latest scientific marvels of the period.

To find the capsule, start at the memorial statue of me. Walk east toward the setting sun for 15 yards. Then dig a hole three feet deep.

Lionel Landrover

Teddy snatched the letter back. "I went to the park this morning and dug up the capsule," he said, setting the shiny iron box on the table. "This is just how I found it. I wanted witnesses when I opened it."

Teddy untied the rope and poured the contents of the box on the table. Everyone looked at the items. Then Tony started to laugh.

"Teddy, next time dig a little deeper for the facts," Tony said. "Your story is so full of holes that it puts Swiss cheese to shame."

How did Tony know that "Tricky" Teddy was pulling another one of his schemes? Can you find five facts in the story—and five objects in the illustration—that gave Teddy away?

Answers on page 37.

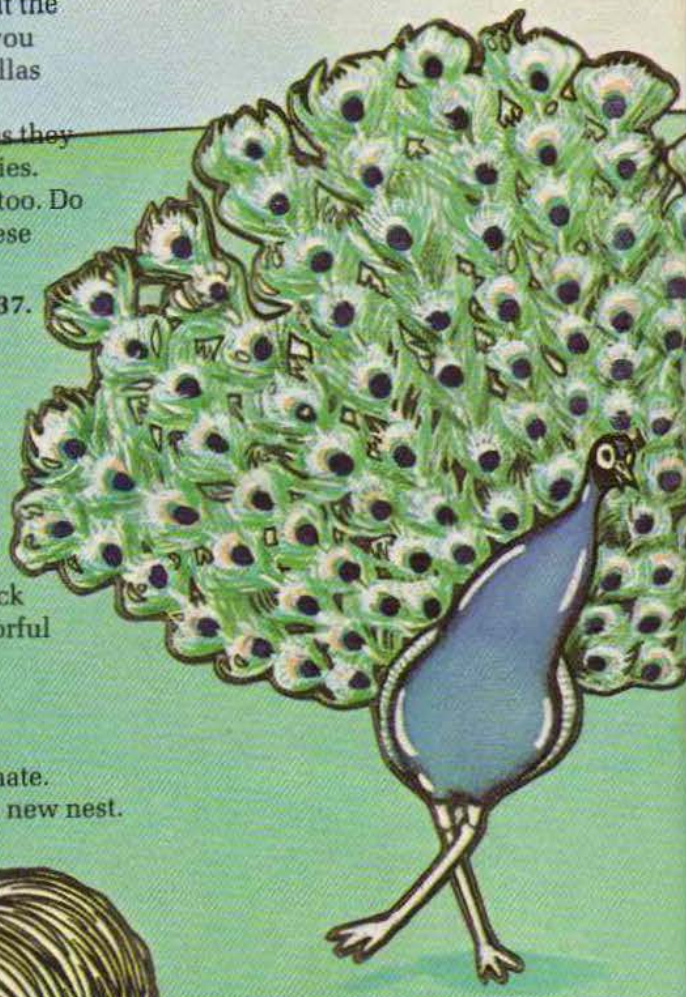
You Don't

In our story about the mountain gorilla, you found out that gorillas can communicate silently. Sometimes they talk with their bodies. Other animals do, too. Do you know what these animal signs say?

Answers on page 37.

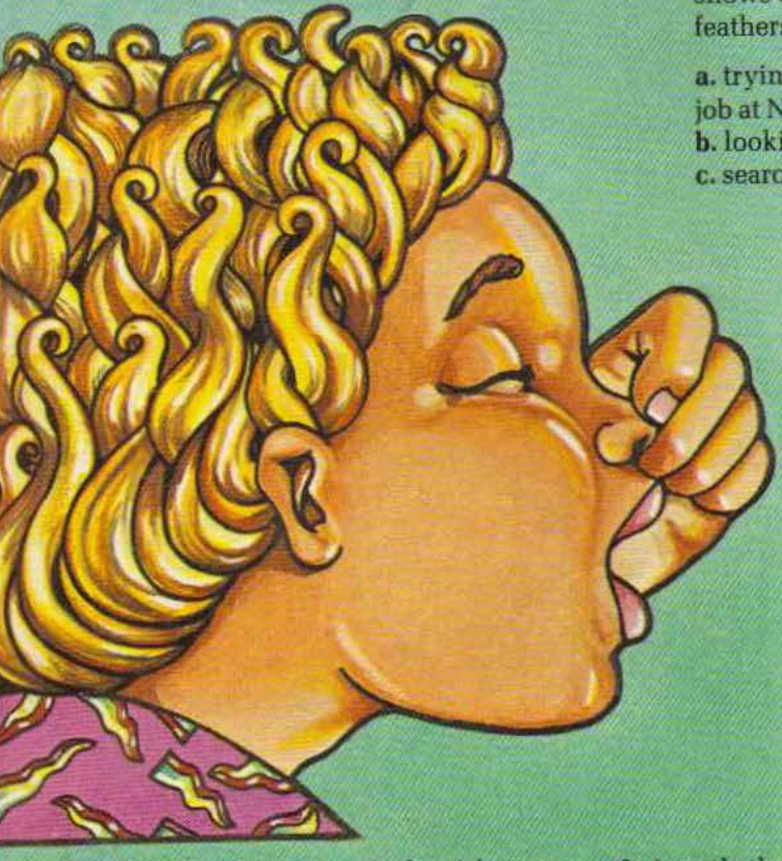
1. The tail-up signal of a white-tailed deer means

a. it wants to ask a question.
b. warning! Enemy coming.
c. it's under two years old.



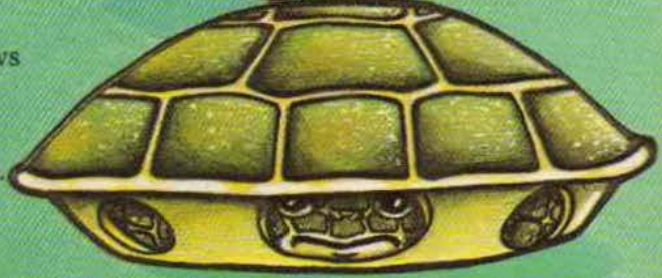
2. When a peacock shows off its colorful feathers, it is

a. trying to get a job at NBC-TV.
b. looking for a mate.
c. searching for a new nest.



3. Wanda Woebegone, the girl in the picture, is letting you know that

a. she has a cold.
b. she smells something really gross.
c. she thinks you're pretty funny.

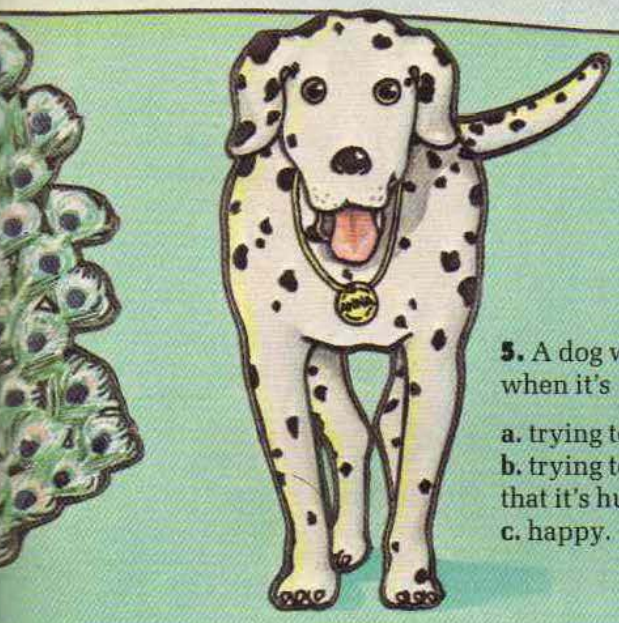


4. A turtle that withdraws into its shell is

a. eating its food.
b. playing hide and seek.
c. protecting itself from animals that would eat or attack it.

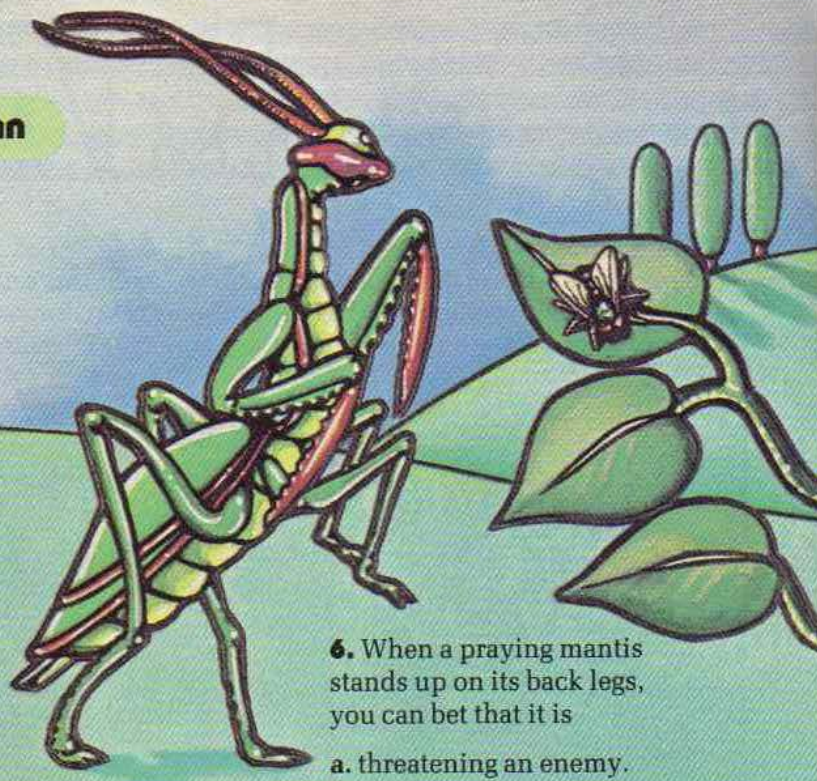
Say!

by Rebecca Herman



5. A dog wags its tail when it's

a. trying to cool off.
b. trying to tell you that it's hungry.
c. happy.

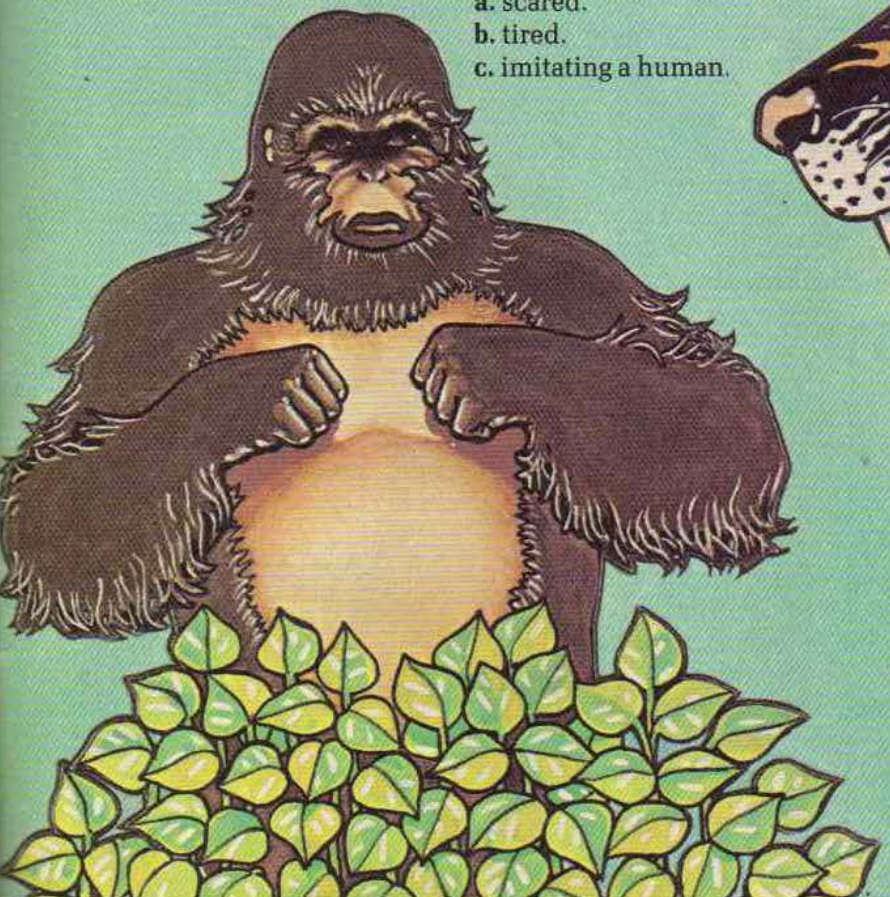


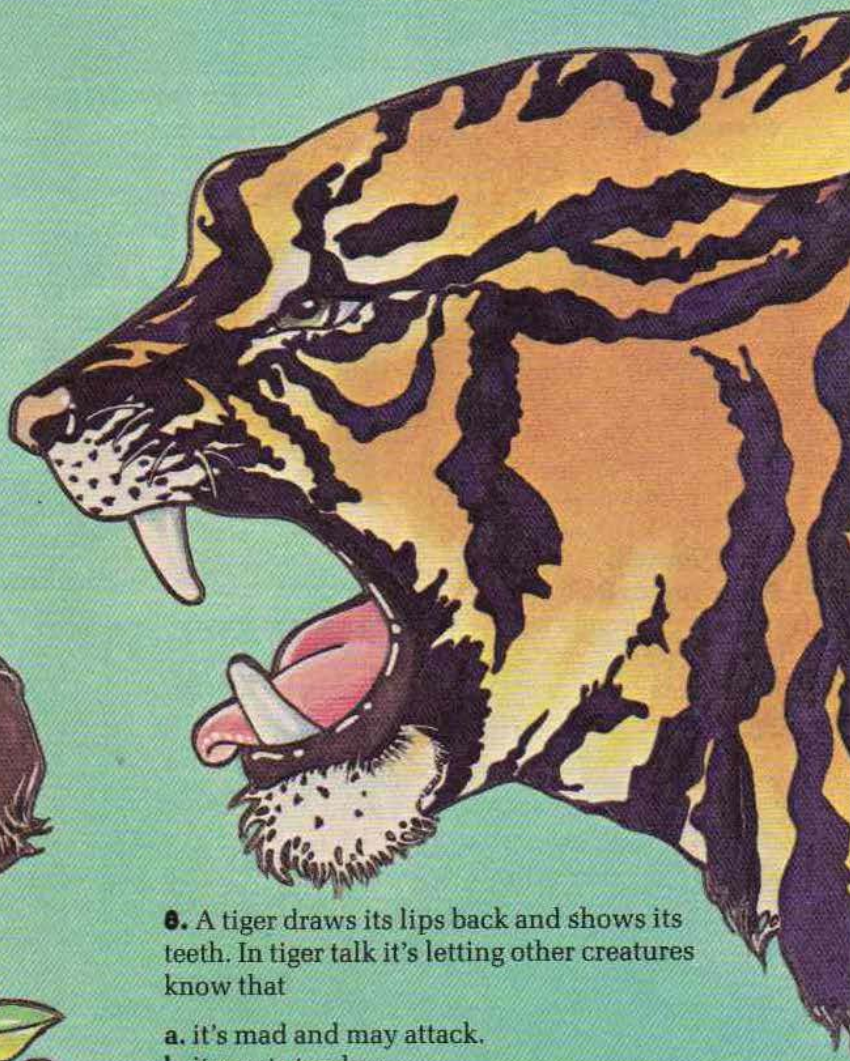
6. When a praying mantis stands up on its back legs, you can bet that it is

a. threatening an enemy.
b. praying.
c. about to climb a cornstalk.

7. A gorilla that beats its chest is

a. scared.
b. tired.
c. imitating a human.





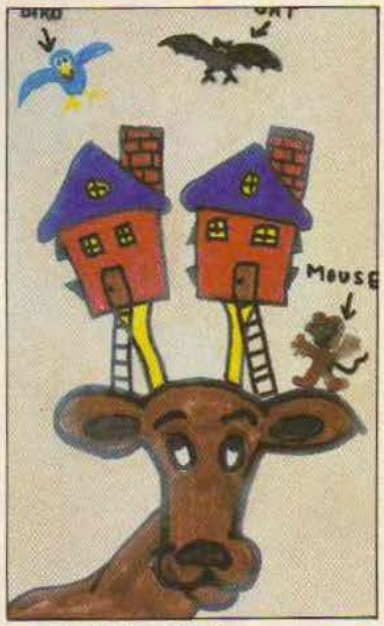
8. A tiger draws its lips back and shows its teeth. In tiger talk it's letting other creatures know that

a. it's mad and may attack.
b. it wants to play.
c. it's getting old and may die.

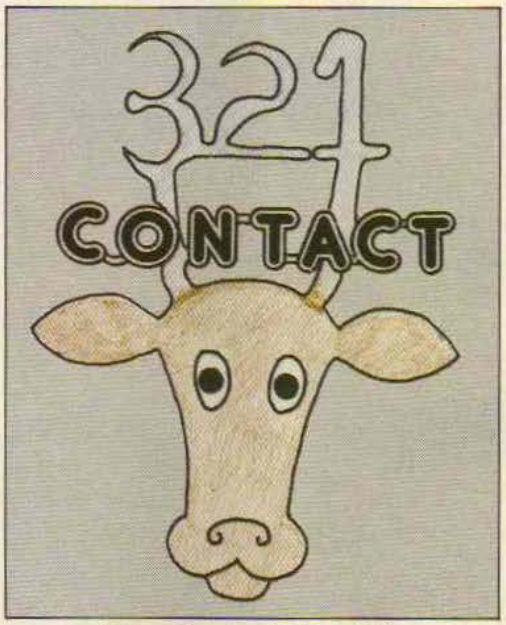
MAIL

Horn Creatures

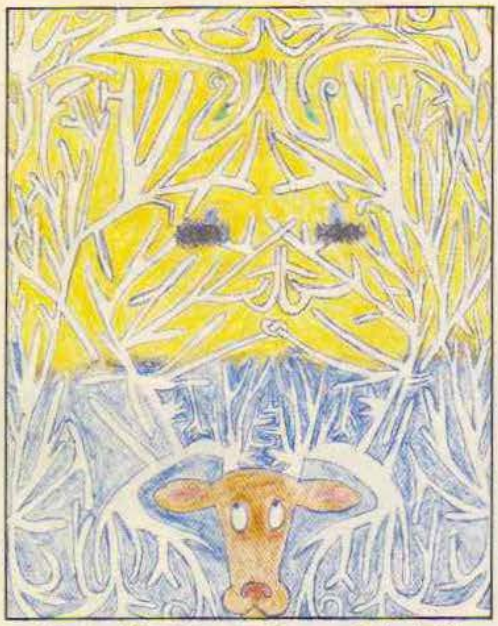
Last October we drew you the head of a strange-looking creature–and told you to give it a special pair of horns or antlers. You sent in some great drawings. Here are a few:



Lewis Achenbach, Glenolden, PA

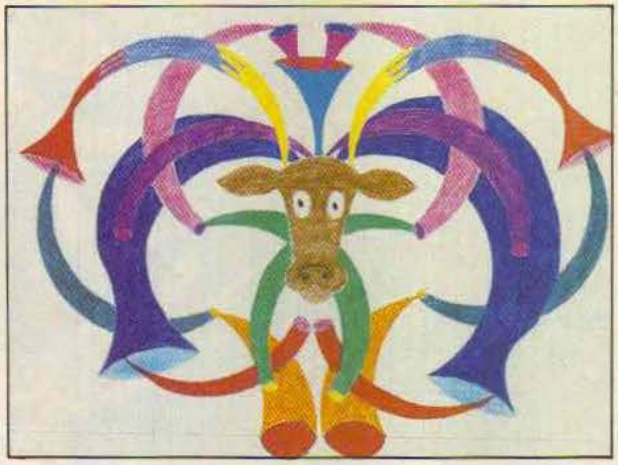


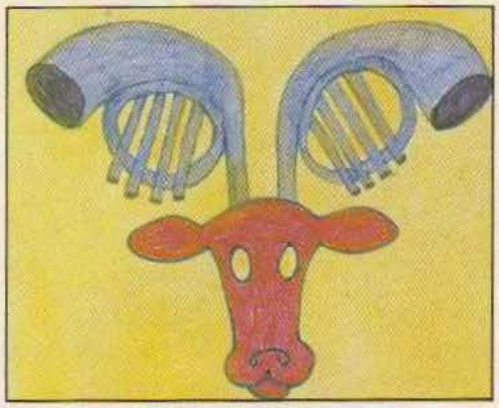
Paco Joyce, Acton, CA



Glenn Chambers, Texas City, TX

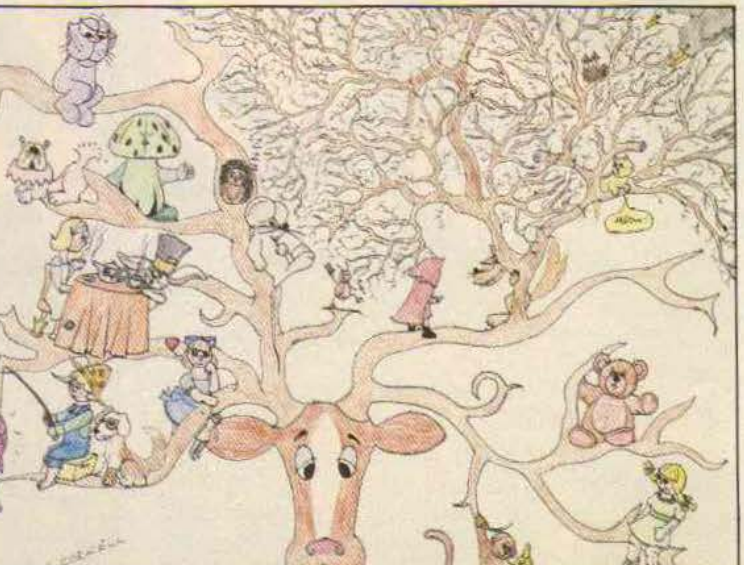
Rebeca Silva, Upper Darby, PA



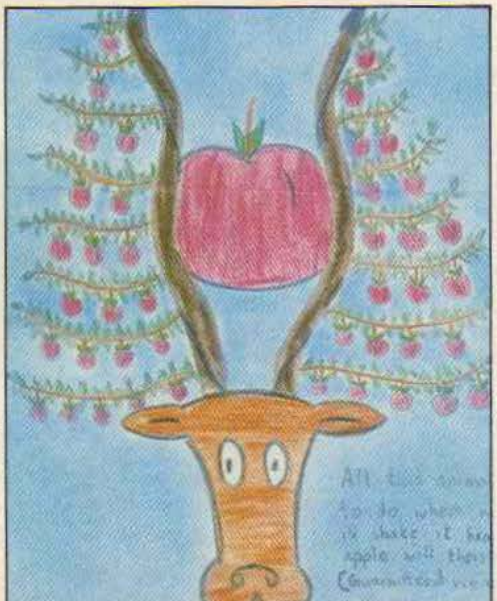


Mark Meier, Stockton, NJ

Ellen Cornell, Greentown, IN



Elvira Falcocchio, Forest Hills, NY



Letters

Heavy Reading

Dear 3-2-1 CONTACT,

When you do the magazine, do you read it?

Jennifer Haborak
Perth Amboy, NJ

Dear Jennifer:

Do we ever! We read all of our stories again and again. With each reading, we make changes until we think the articles are just right. Then we send the stories to a company that sets them in the type you see in the magazine.

When the stories come back to us, we read them at least twice more. We want to make sure there are no mistakes.

Next, the printed articles and the pictures are put together to form CONTACT. And we read the stories again before they are sent to the company that prints the magazine.

The printer sends us samples of CONTACT for our okay. There's one last time we read the magazine—at home when we get our copies in the mail, just like you!

A Question of Numbers

Dear 3-2-1 CONTACT,

How come your magazine doesn't print the volume and number of the magazine? The volume tells the readers how long the magazine has been in circulation. The number tells the reader how many times the magazine has been sent out during the year.

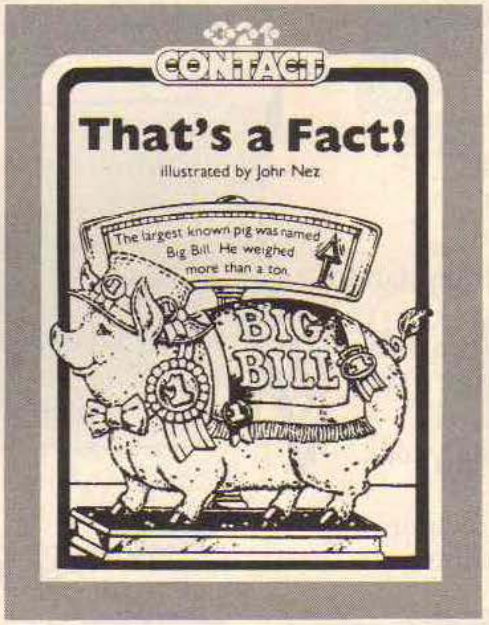
Also, I enjoyed your article "Saving Babies." I decided to enter the medical field when I was five years old, so this article encouraged me.

Melanie Monteverde
San Francisco, CA

Dear Melanie,

Look at the inside of the front cover. At the bottom of the page, you'll see very tiny print. In that paragraph, we tell you the number of the magazine. This month it's 47. CONTACT comes out 10 times a year, so you can just divide by 10 and see that we've been around for four and a half years. The first issue was published in November 1979.

P.S. Good luck in your career!



Is That a Fact?

Dear 3-2-1 CONTACT,

I really enjoy reading *Factoids*. So does my science teacher. Since you started this magazine, how many Factoids have you printed all together?

An interested reader,
Carolyn Hart
Salem, MA

Dear Carolyn,

We're glad to know that you and your teacher like Factoids. *We think it is the favorite part of the magazine for many readers.*

In every issue we give you seven Factoids. Including this month's bunch, that's a grand total of 329 Factoids.

And if that weren't enough, there are even two Factoid books. They are called That's a Fact *and* That's a Fact, Too, *published by Random House. They're filled with strange little facts that can wow your friends, amaze your family, and dazzle your teachers!*

And the Winner Is...

Dear 3-2-1 CONTACT,

Your mailing address is Ridgefield, New Jersey. I live in Arizona. Sometimes for a contest you say the first 10 letters you receive will win T-shirts.

Kids from Ridgefield can go to the post office and tell the clerk or put the letter in your post office box. Then when the people who live far away still have their letters in the mail, you are reading the closer people's letters. That's not fair!

Karter Neal
Phoenix, AZ

Dear Karter,

It isn't fair. That's why we don't do it. Here's how we choose our contest winners.

Let's say we run a contest that calls for picking the winners at random. After we get all the mail for that contest, we put the entries into a box. Then, without looking, we pull out the winners.

A reader from Arizona has just as much chance to win as a reader from New Jersey. So do our readers around the world.

By the way, look for the contest every month in Extra! *This month, the contest is on page 36.*

We Want Mail!

Dear Readers,

We really love hearing from you. The questions, ideas and complaints we get help us make CONTACT a better magazine. So why not drop us a line? We can't answer every letter, but we do read them all. Send your mail to:

3-2-1 CONTACT: Letters
P.O. Box 599
Ridgefield, NJ 07657

Extra!

Don't close your magazine yet. There are more great games, marvelous mysteries of science, and interesting bits of information right here. So read on!

Mirror A-Maze-Ment

In this month's Bloodhound Gang, Vikki, Ricardo, and Skip discovered that things are not always what they seem. This little maze, for instance, might not look too difficult—until you add a slight twist.

What You Need

a small mirror a pencil

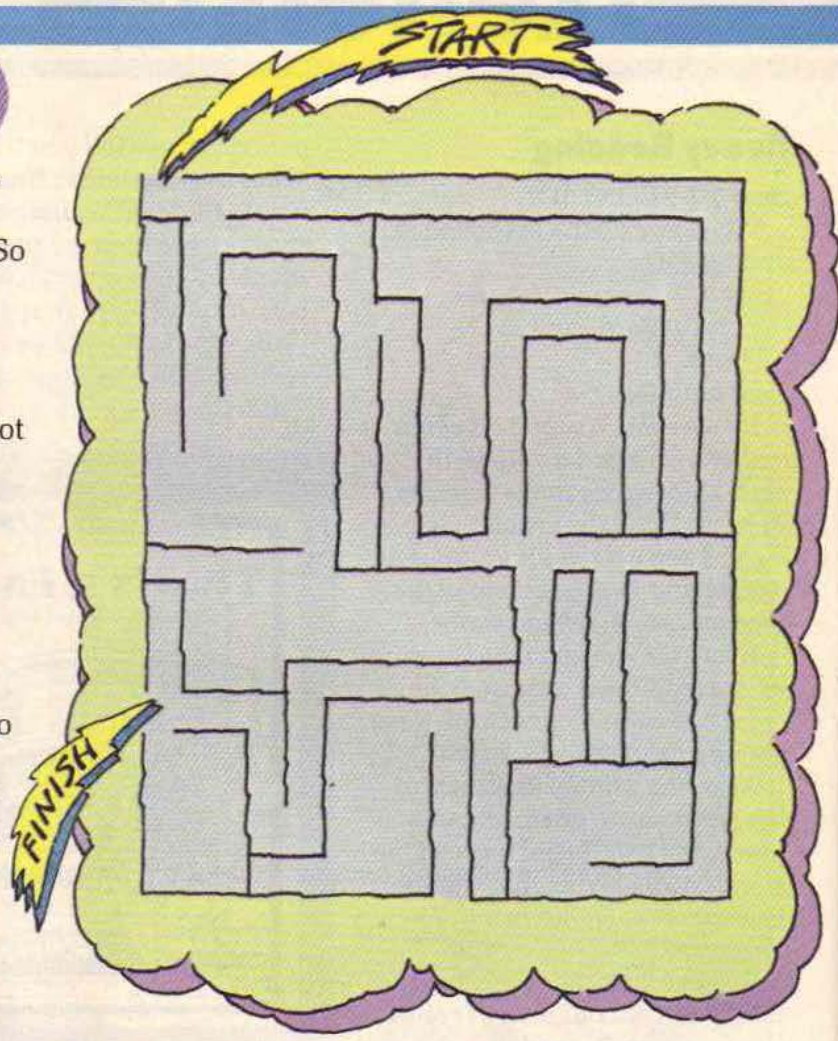
What You Do

1. With your finger, trace the maze from start to finish. Pretty simple, huh?

2. Now take a pencil and try the maze a different way. Hold a mirror to the magazine so you can see the reflection of the maze clearly.

3. Do the maze again, but this time only look at it through the mirror.

It's not as easy as it looks. The reflection shows the opposite of what you are doing.



Saving Gorillas

On page 4, you found out that there are fewer than 230 mountain gorillas left on earth. Dr. Dian Fossey is trying to help save them. She has helped put together a group to patrol the forests where the gorillas live. The patrol scares away—or captures—poachers and destroys their traps.

If you would like to find out more about Dr. Fossey's work and to see how you might help, write to: **The Digit Fund**
c/o Rane Randolph, C.P.A.
P.O. Box 25
Ithaca, NY 14851

Fair Firsts

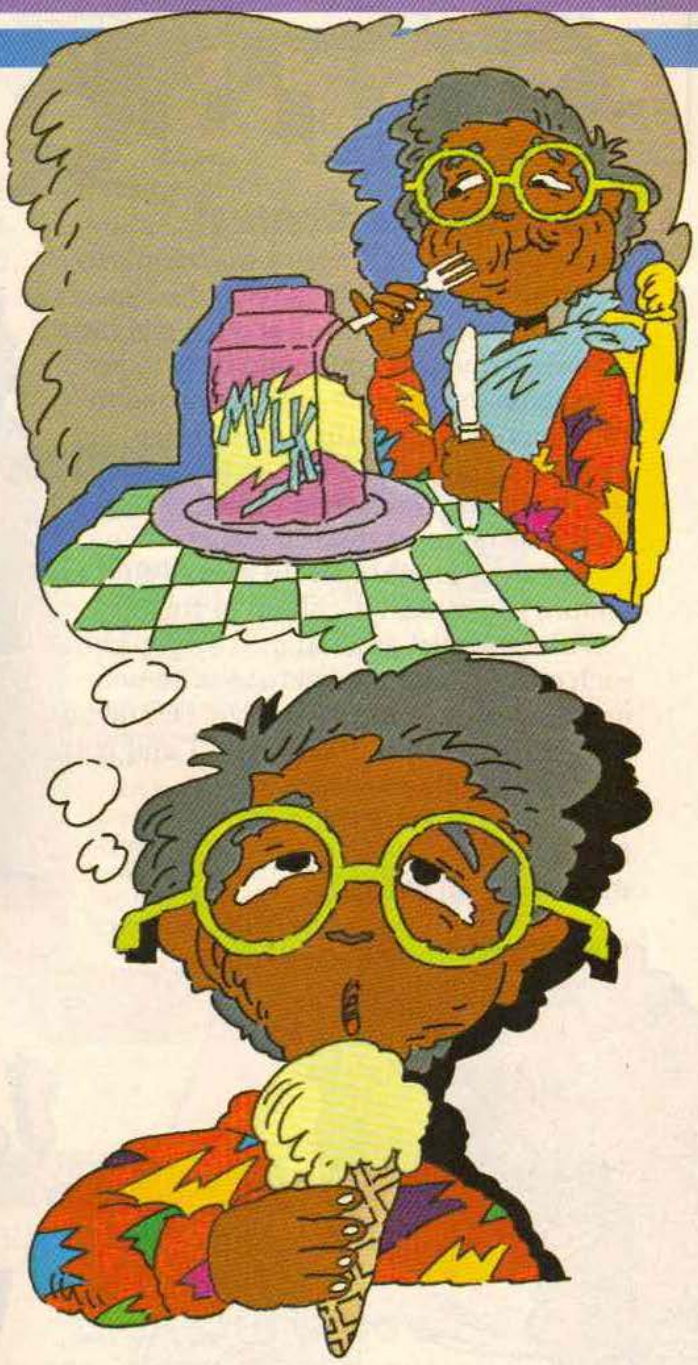
The inventions described below were first shown at world's fairs. Use the clues to figure out what each one is.

1. You've probably seen pictures of this woman with her robe, book, and torch. But years ago, she was a mess. Pieces of her stretched from New York to Philadelphia, where her arm and torch were put on display at the fair of 1876. Today she stands—in one piece—in the harbor of New York City. Do you know her?

2. Rindy Ross, lead singer of Quarterflash, would be lost without this invention by Adolph Sax. Visitors to the London fair of 1851 first heard this woodwind and brass instrument. Since then, musicians all over the world have puckered up to it. Can you name the instrument?

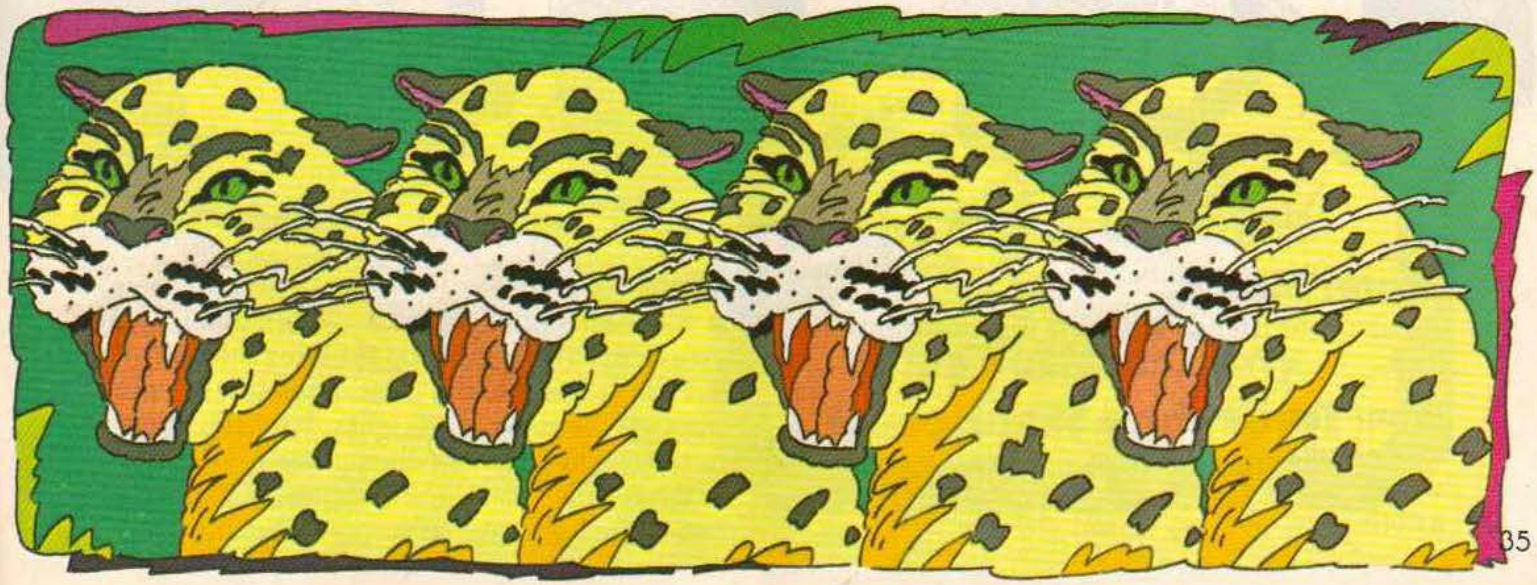
3. Lucky visitors to the St. Louis fair in 1904 got to eat a food container! It has a wide opening at one end, and tapers to a closed point at the other. It is designed to hold another incredible edible made from milk. What do you call the container?

4. Visitors to the Paris fair of 1900 stepped right up to this invention. Like magic, it moved people from one floor to the next. The invention works on an endless belt. Steps appear, move up or down, and disappear back in the ground again. Can you name it?



Leopard Spotter

Here's a puzzling picture. Three of these leopards are exactly alike. The fourth one is an imposter hiding out with them. See if you can spot the tricky cat.



Extra!

Time Capsule Contest

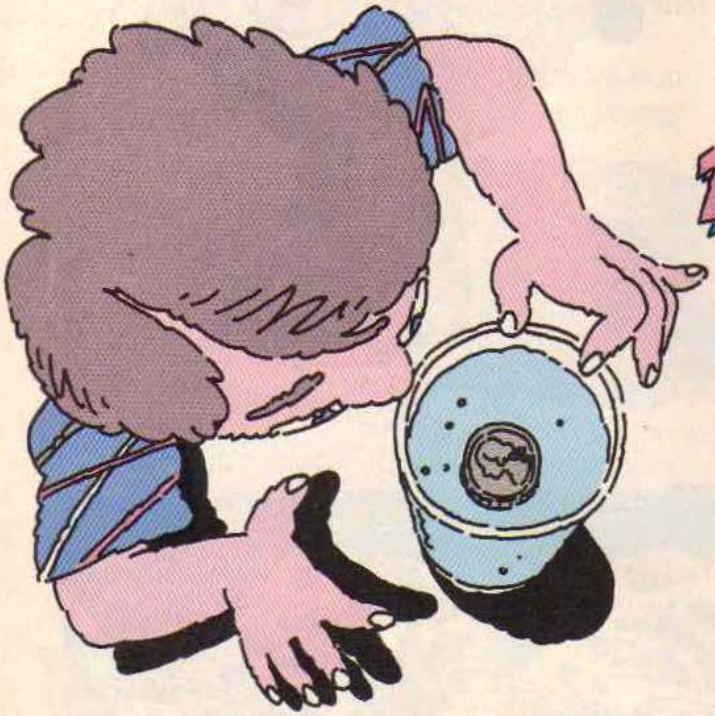
Tricky Teddy couldn't trick his friends in the mini-mystery. The items in the capsule gave him away. But think about a real time capsule—one that you might bury today.

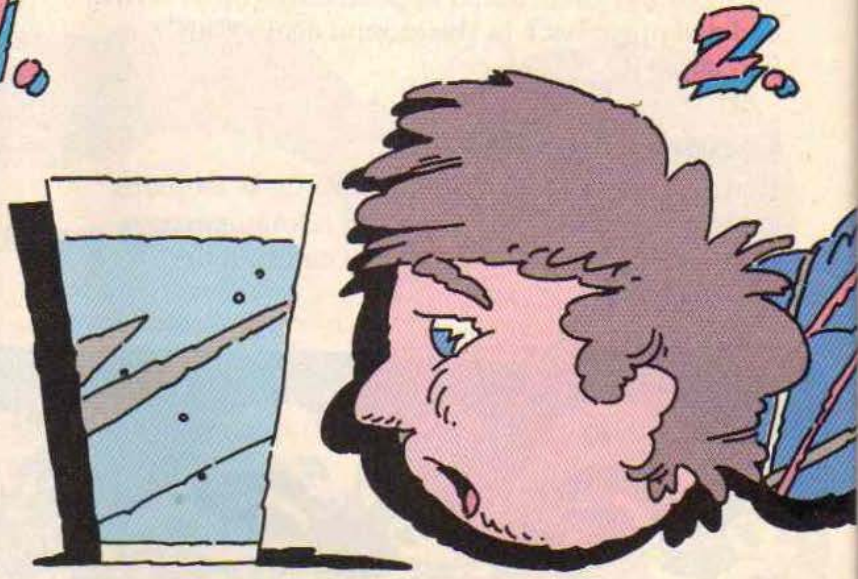
Imagine the capsule will be opened in 200 years. You want the items to give people in 2184 a good idea of what earth and its people were like in 1984.

Choose no more than 10 objects. The items can be anything from bubble gum to a picture of a rocket. It's all up to you.

Make your list and tell us why you chose each object. Send the list to us with your name, address, and T-shirt size. Our favorites will be printed in CONTACT and will win T-shirts. Send entries to:

3-2-1 Contest: Time Capsule
P.O. Box 599
Ridgefield, NJ 07657





Water Magic

Amaze your friends with this disappearing coin trick.

What You Need

a drinking glass
water
a coin

What You Do

1. Place an empty glass over a coin that is lying on a table. You'll have no trouble seeing the coin.

2. Pour water into the glass. Look for the coin through the sides of the glass. You won't be able to see it. The coin has disappeared.

What's the "cent-sible" solution? The water bends the light rays so you can't see the coin.

Did It!

Mini-Mystery Answer (page 29)
1. An iron box left in the ground for 100 years would not be shiny. It would have rusted. Plus, the rope tied around it would have rotted.
2. June only has 30 days, not 31.
3. The first day of summer is always on the summer solstice, usually around June 22.
4. A memorial statue is erected after a person has died. So that letter must be a fake because Lionel Landrover would have been dead when the statue was put up.
5. The sun always sets in the west, never in the east.

The five items in the illustration that did not exist when Lionel supposedly buried his time capsule in 1884:
- the record
- the flashlight
- the airplane
- the digital wristwatch
- the aerosol spray can

You Don't Say (pages 30-31)
1. b.
2. b.
3. b.
4. c.
5. c.
6. a.
7. a.
8. a.

Leopard Spotter (page 35)
The leopard that is different is the third one from the left.

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Fair Firsts (page 35)
1. The Statue of Liberty
2. A saxophone
3. An ice-cream cone
4. An escalator

Thank you! Thanks to Jessie Dorin and Houghton Mifflin for help with the story about Dian Fossey and the mountain gorillas. Thank you to Peter Drill of the New Orleans World Exposition for helping with the story about world's fairs. Thanks to Terry Thompson of the Marine Science Consortium at Wallops Island, Virginia, for assistance with the beach story. Alice Katson, Director of the Marin (CA) Wildlife Center also helped with that story.

Next Month!

Here's a sample of what you'll find in the next issue of 3-2-1 CONTACT:

Look Out Below!
Meet two underwater photographers who take pictures of life under the sea.

Kids to the Rescue
Find out how kids all over the United States are helping to save the Statue of Liberty.

The Other Olympics
CONTACT takes a look at three unusual kinds of Olympics.

Plus Factoids, Any Questions? and More!

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☐ Yes! Please send 1 year (10 issues) of Enter for only $12.95.

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One Disk Drive, P.O. Box 2685, Boulder, CO 80322

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8HNB6

INFORM WITH ENTER

NEW–ENTER Magazine. The *fun* way for your child to learn computer skills, understand computer technology and even become a video game champ. Ten issues bring programs, quizzes, puzzles and features that involve 10-16 year olds and encourage them to become competent computerites. And you don't need a computer in your home to make it work!

SESAME STREET ORDER FORM

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☐ I prefer 2 years (20 issues) for only $18.95.

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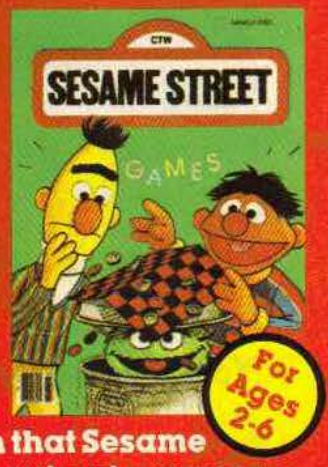
8HNC4

ENJOY WITH SESAME STREET



Sesame Street Magazine–Big Bird and his delightful friends will bring dozens of playful surprises, ten terrific times a year. (It's the entertaining education that Sesame Street does best!) Puzzles, cut-outs, games, A-B-C's, 1-2-3's...there's all the magic of the TV super-series in every colorful issue.

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8HND2

ENTERTAIN WITH ELECTRIC COMPANY

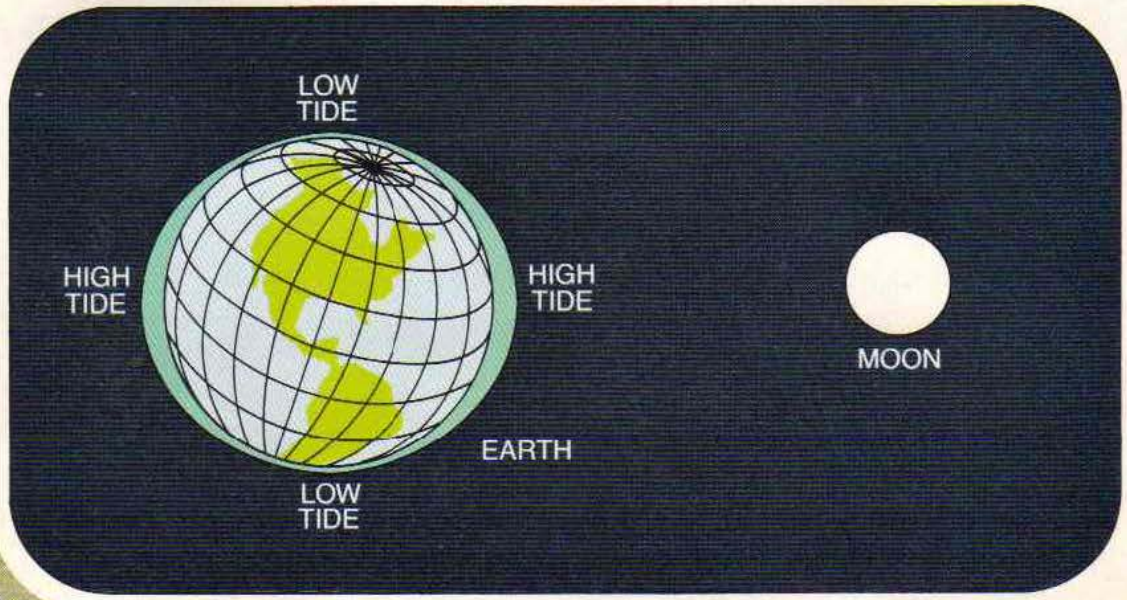
The Electric Company Magazine–as creatively entertaining as the T.V. show kids love. It's amusing, playful, absorbing and educational for beginning and young readers. Enjoy ten colorful issues filled with puzzles, posters, cut-outs, Spidey super stories, jokes...and sunny smiles.

Earthfacts: Tides

Each month CONTACT will bring you another *Earth Works*. Save these pages in a notebook. Soon you will have your own guide to the wonders of the planet earth.

EarthWorks

- The tide is the twice daily rise and fall of the ocean's water. In most places, it's rather slight—not more than a couple of feet.
- When water reaches its highest point on the shore, it is *high tide*. Then for about six hours the water level falls to its lowest point, *low tide*. Most places have two high tides and two low tides every 24 hours.
- The tide at Canada's Bay of Fundy is the highest in the world. A five-story building standing high and dry at low tide would be completely covered at high tide.
- *Tidal bores* are special tides that happen when water from the ocean is funneled into a river's narrow entrance. As it goes up the river the water piles higher and higher. The bore at the entrance of Brazil's Amazon River is a wall of water 16 feet high and one mile wide. At high tide it travels 13 miles an hour. Its roar can be heard 15 miles away!
- Ship captains depend on tides even today. Ships usually enter ports when the tide is high. That way they can use the water to help them float safely over the shallow areas.
- Tides also help keep harbors clean by floating waste out to sea, where it sinks to the ocean bottom.
- Beach animals, like snails and lugworms, that live in areas between the reach of high and low tide are special. They must be able to breathe air when the tide is out. They must also be able to live in water when they are covered up by the high tide.
- Tidal power plants use the powerful moving water of some tides to turn turbines that make electricity. Tidal power plants are already producing energy in France, the Soviet Union, Canada, and China.
- Tides are caused by the pull of the moon and the sun. But because the sun is so much farther away, its pull is less than half that of the moon.
- Tidal waves are giant walls of water that are caused by earthquakes under the sea. When tidal waves crash onto the shore, they can be 60 feet high.



High tide occurs where the moon's gravity pulls on earth's water, making it bulge upward. It's always high tide where the moon is closest to earth and on the opposite side of the planet. Places in between have low tide.

EarthWorks

Tides

Is this an island or not? That all depends on the tide. At low tide *(top photo)*, France's Mont St. Michel is just a high rock surrounded by mud flats and quicksand. That all changes at high tide *(bottom photo)*. The waters of the bay roll in quickly from the open sea. They surround the small rock, cutting it off from nearby land and making it an island. For more on some of the unusual things tides can do, turn to page 39.

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